STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Final!

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
ACTING COMMISSIONER

January 3, 2006

Mr. Greg Lambert
Atlantic Salmon of Maine, LLC
PO Box 380
Oquossoc, Maine 04964

RE: Maine Pollutant Discharge Elimination System (MEPDES) Permit #ME0110116
Maine Waste Discharge License (WDL) Application # W-004701-5Q-B-R
Former Permit Compliance System Tracking #MEU504701
Final Permit/License

Dear Mr. Lambert:

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

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

The Department would like to make you aware that your monthly Discharge Monitoring Report (DMR) forms may not reflect the revisions in this permitting action for several months after permit issuance, however, you are required to report applicable test results for parameters required by this permitting action that do not appear on the DMR. Please see the attached April 2003 O&M Newsletter article regarding this matter.

If you have any questions regarding the matter, please feel free to call me at (207) 287-6114 or contact me via email at Robert.D.Stratton@maine.gov.

Sincerely,

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

Enc./cc: Beth DeHaas (MEDEP); [redacted]
Andrew Hamilton (Eaton, Peabody); Norm Rodrigue (Union Water & Power Co.)

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 624-6550FAX: (207) 624-6024
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-6477 FAX: (207) 764-1507

web site: www.maine.gov/dep

DMR Lag

(reprinted from April 2003 O&M Newsletter)

When the Department renews discharge permits, the parameter limits may change or parameters may be added or deleted. In some cases, it is merely the replacement of the federally issued NPDES permit with a state-issued MEPDES permit that results in different limits. When the new permit is finalized, a copy of the permit is passed to our data entry staff for coding into EPA's Permits Compliance System (PCS) database. PCS was developed in the 1970's and is not user-friendly. Entering or changing parameters can take weeks or even months. This can create a lag between the time your new permit becomes effective and the new permit limits appearing on your DMRs. If you are faced with this, it can create three different situations that have to be dealt with in different ways.

1. If the parameter was included on previous DMRs, but only the limit was changed, there will be a space for the data. Please go ahead and enter it. When the changes are made to PCS, the program will have the data and compare it to the new limit.

2. When a parameter is eliminated from monitoring in your new permit, but there is a delay in changing the DMR, you will have a space on the DMR that needs to be filled. For a parameter that has been eliminated, please enter the space on the DMR for that parameter only with "NODI-9" (No Discharge Indicator Code #9). This code means monitoring is conditional or not required this monitoring period.

3. When your new permit includes parameters for which monitoring was not previously required, and coding has not caught up on the DMRs, there will not be any space on the DMR identified for those parameters. In that case, please fill out an extra sheet of paper with the facility name and permit number, along with all of the information normally required for each parameter (parameter code, data, frequency of analysis, sample type, and number of exceedances). Each data point should be identified as monthly average, weekly average, daily max, etc. and the units of measurement such as mg/L or lb/day. Staple the extra sheet to the DMR so that the extra data stays with the DMR form. Our data entry staff cannot enter the data for the new parameters until the PCS coding catches up. When the PCS coding does catch up, our data entry staff will have the data right at hand to do the entry without having to take the extra time to seek it from your inspector or from you.

EPA is planning significant improvements for the PCS system that will be implemented in the next few years. These improvements should allow us to issue modified permits and DMRs concurrently. Until then we appreciate your assistance and patience in this effort.

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

DEPARTMENT ORDER

IN THE MATTER OF

ATLANTIC SALMON OF MAINE, LLC	)	MAINE POLLUTANT DISCHARGE
RANGELEY, FRANKLIN COUNTY, MAINE	)	ELIMINATION SYSTEM PERMIT
FISH HATCHERY	)	AND
#ME0110116	)	WASTE DISCHARGE LICENSE
#W-004701-5Q-B-R **APPROVAL**	)	**RENEWAL**

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

APPLICATION SUMMARY

The applicant has applied for a renewal of Waste Discharge License (WDL) #W-004701-41-A-R, which was issued on December 12, 1986 for a five-year term. The WDL approved the discharge of a daily maximum of 15.5 million gallons per day (MGD) of fish hatchery wastewater to the Rangeley River, Class B (since upgraded to Class A) and a tributary to Mooselookmeguntic Lake, from a commercial Atlantic salmon hatchery and rearing facility in Rangeley (Oquossoc), Maine.

PERMIT SUMMARY

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 lands. In those areas, the Department maintains the authority to issue WDLs pursuant to Maine law. The extent of Maine's delegated authority is under appeal at the time of this permitting action. From this point forward, the program will be referred to as the Maine Pollutant Discharge Elimination System (MEPDES) program and permit #ME0110116 will be utilized as the primary reference number for the Rangeley facility. The Department previously assigned the facility a Permit Compliance System tracking number of #MEU504701, but with issuance of a MEPDES permit, is reassigning the facility number to correspond to USEPA's 1987 designation.

This permitting action is similar to the December 12, 1986 WDL in that it is carrying forward:

1. the pH limit of 6.0-8.5 standard units.

This permitting action is different from the December 12, 1986 WDL in that it is:

1. eliminating the 15.5 MGD daily maximum discharge flow limit and establishing a monthly average discharge flow limit of 12 MGD;
2. establishing BOD and TSS monthly average and daily maximum concentration limits with a provision for the Department to establish new limits in the future based on technology performance analyses of the industry as a whole;
3. establishing BOD and TSS monthly average and daily maximum mass limits derived from the previous license effluent TSS limits;
4. establishing a year-round annual phosphorus mass limit based on the historical facility discharge for three years followed by a revised water quality based annual mass limit based on the proximity of Mooselookmeguntic Lake, and year round mass reporting requirements in lbs/month;
5. establishing a seasonal monthly average phosphorus concentration reporting requirement for three years followed by a water quality based monthly average phosphorus concentration limit based on the discharge to the Rangeley River, and a daily maximum concentration reporting requirement;
6. establishing seasonal monthly average and daily maximum orthophosphate mass and concentration monitoring requirements through 2006;
7. converting previous mass limits and reporting requirements from pounds of pollutant per 100 pounds of fish on hand to pounds of pollutant per unit of time;
8. establishing monthly average and daily maximum reporting requirements for mass of fish on hand;
9. establishing a daily maximum mass limit for formalin based on Department best professional judgement (BPJ) of best practicable treatment (BPT) and monthly average mass and concentration reporting requirements;
10. establishing a daily maximum concentration limit for formalin based on the previously established formaldehyde limit in other facility licenses for three years followed by a revised concentration limit based on Department BPJ of formalin toxicity;
11. establishing minimum monitoring frequency and sample type requirements based on Department BPJ;
12. eliminating ammonia nitrogen effluent limits and reporting requirements;
13. eliminating nitrate nitrogen effluent limits and reporting requirements;
14. eliminating settleable solids effluent limits and reporting requirements;
15. requiring a current facility Operation and Maintenance Plan;
16. establishing a schedule for implementation of revised phosphorus and formalin limits to provide for infrastructure, operation and maintenance upgrades as appropriate to insure compliance;
17. requiring demonstration of renewal of the lease agreement effecting effluent dilution;
18. requiring submittal of an Alternative Discharge Study report six months prior to permit expiration;
19. establishing requirements for settling basin cleaning;
20. requiring compliance with existing state salmonid fish health rules;
21. establishing requirements related to proper use and record keeping of therapeutic agents;
22. establishing record keeping requirements for disinfecting/sanitizing agents;
23. establishing BPJ derived minimum treatment technology requirements for the Rangeley facility;
24. establishing requirements for annual ambient macroinvertebrate biomonitoring; and
25. requiring a fish Containment Management System with provisions for auditing and reporting.

CONCLUSIONS

BASED on the findings in the attached Proposed Draft Fact Sheet dated November 29, 2005, and subject to the Conditions listed below, the Department makes the following conclusions:

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

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

3. The provisions of the State's antidegradation policy, 38 MRSA Section 464(4)(F), will be met, in that:

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

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

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

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

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

4. The discharge will be subject to effluent limitations that require application of best practicable treatment.

5. The Discharge is necessary and there are no other reasonable alternatives available.

ACTION

THEREFORE, the Department APPROVES the above noted application of ATLANTIC SALMON OF MAINE, LLC. to discharge fish hatchery wastewater consisting of a monthly average flow of 12 MGD to the Rangeley River, Class A, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations including:

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

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

3. This permit expires five (5) years from the date of signature below.

DONE AND DATED AT AUGUSTA, MAINE, THIS 30TH DAY OF December, 2005.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____ for
David P. Littell, Acting Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: April 3, 1995
Date of application acceptance: April 23, 1995

FILED
JAN 3 2006
BOARD OF ENVIRONMENTAL PROT.
STATE OF MAINE

Date filed with Board of Environmental Protection _____.

This Order prepared by Robert D. Stratton, BUREAU OF LAND & WATER QUALITY
W-004701-5Q-B-R / #ME0110116 December 30, 2005

SPECIAL CONDITIONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date of this permit and lasting through permit expiration, the permittee is authorized to discharge **fish hatchery wastewater from Outfall #004A** to the Rangeley River. Such discharges shall be limited and monitored by the permittee as specified below[1]:

Monitoring Parameter	Reporting Requirements		Minimum Monitoring Requirements			
	Monthly Average as specified	Daily Maximum as specified	Monthly Average as specified	Daily Maximum as specified	Measurement Frequency as specified	Sample Type as specified
Flow *[50050]*	12 MGD *[03]*	---	---	---	Daily *[01/01]*	Measured *[MS]*
BOD[2] *[00310]*	379 lbs/day *[26]*	415 lbs/day *[26]*	6 mg/L *[19]*	10 mg/L *[19]*	1/week *[01/07]*	Composite[3] *[CP]*
TSS[2] *[00530]*	249 lbs/day *[26]*	285 lbs/day *[26]*	6 mg/L *[19]*	10 mg/L *[19]*	1/week *[01/07]*	Composite[3] *[CP]*
Total Phosphorus[4] **Effective until August 31, 2008** *[00665]*	Report total lbs/month *[76]*	Maximum 1,682 lbs/year *[50]*	report mg/L *[19]*	report mg/L *[19]*	1/week *[01/07]*	Composite[3] *[CP]*
Total Phosphorus[4] **Beginning September 1, 2008** *[00665]*	Report total lbs/month *[76]*	Maximum 660 lbs/year *[50]*	0.1 mg/L *[19]*	report mg/L *[19]*	1/week *[01/07]*	Composite[3] *[CP]*
Orthophosphate (as P)[4] **June 1 - Sept 30, 2006** *[04175]*	report lbs/day *[26]*	report lbs/day *[26]*	report mg/L *[19]*	report mg/L *[19]*	1/week *[01/07]*	Composite[3] *[CP]*
Fish on Hand *[45604]*	report lbs/day *[26]*	report lbs/day *[26]*	---	---	1/week *[01/07]*	Calculated *[CA]*
Formalin[5] **Effective until August 31, 2008** *[51064]*	report lbs/day *[26]*	49 lbs/day *[26]*	report mg/L *[19]*	13.5 mg/L *[19]*	1/week *[01/07]*	Calculated *[CA]*
Formalin[5] **Beginning September 1, 2008** *[51064]*	report lbs/day *[26]*	49 lbs/day *[26]*	report mg/L *[19]*	2.3 mg/L *[19]*	1/week *[01/07]*	Calculated *[CA]*
pH *[00400]*	---	---	---	6.0-8.5 S.U. *[12]*	1/week *[01/07]*	Grab *[GR]*

The italicized numeric values bracketed in the table above and in subsequent text are code numbers that Department personnel utilize to code the monthly Discharge Monitoring Reports (DMRs). Footnotes are found on Page 6.

SPECIAL CONDITIONS
A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

FOOTNOTES:
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 Human Services unless otherwise approved by the Department. **All effluent limits are gross, end of pipe limits, unless otherwise specified.**

1. Effluent Monitoring: Effluent values shall be determined through sampling at Outfall #004A following all means of wastewater treatment. All monitoring shall be conducted so as to capture conditions representative of wastewater generating processes at the facility, such as flow-through and cleaning discharge flows, use of therapeutic and disinfecting/sanitizing agents, etc. and in consideration of settling pond detention times. Any change in sampling location must be approved by the Department in writing.

2. BOD and TSS: BOD and TSS effluent concentration limits are based on results of secondary level fish hatchery wastewater treatment, developed by EPA. It is the Department's intent to re-evaluate and potentially revise concentration limits in the future based on statistical evaluations of demonstrated performance of consistently and properly utilized treatment technology for the industry.

3. Composite Samples: Composite sample means a sample consisting of a minimum of four grab samples collected at two-hour intervals during the working day at the facility. Alternatively, upon Department approval, the permittee may elect to use an automatic compositer for sampling.

4. Total Phosphorus and Orthophosphate: The concentration and mass effluent limits and monitoring requirements shall consist of gross, end-of-pipe values. **Phosphorus concentration** limits and monitoring requirements (mg/L) are seasonal and are only in effect from June 1 through September 30 each year. **Orthophosphate** monitoring requirements are only in effect from June 1 through September 30, 2006. **Phosphorus mass** limits and monitoring requirements (lbs) are in effect year-round. **The permittee is cautioned that compliance with concentration limits will not necessarily result in compliance with mass limits.** Laboratory analysis shall be conducted on the same sample and shall consist of a low-level phosphorus analysis with a minimum detection limit of 1 part per billion (1 ug/L).

5. Formalin: Formalin monitoring shall be conducted only when in use at the facility and shall consist of a calculated effluent value. The permittee shall calculate the effluent formalin concentration through accurate determinations of the formalin concentration administered in each facility use, the volume of water to which the formalin is added, and dilutions provided from administration to end-of-pipe. The effluent mass shall be calculated by multiplying the gallons of formalin used by a 9.13 lbs / gallon conversion formula based on the specific gravity of formalin. The permittee shall provide this information and calculations to the Department in a document accompanying the monthly DMR. See Fact Sheet Section 17 for sample calculations.

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 the terms and conditions of this permit and only from Outfall #004A, which constitutes the only outfall from the facility. Discharges of wastewater from any other point source are not authorized under this permit, and shall be reported in accordance with Standard Condition B(5)(*Bypass*) of this permit.

D. NOTIFICATION REQUIREMENT:

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

1. Any substantial change in the volume or character of pollutants being introduced into the wastewater collection and treatment system.

2. For the purposes of this section, adequate notice shall include information on:

   a. The quality or quantity of wastewater introduced to the waste water collection and treatment system; and
   b. Any anticipated impact of the change in the quantity or quality of the wastewater to be discharged from the treatment system.

SPECIAL CONDITIONS

E. MONITORING AND REPORTING:

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

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

F. OPERATION & MAINTENANCE (O&M) PLAN:

On or before June 1, 2006, the permittee shall submit to the Department a current written comprehensive Operation & Maintenance (O&M) Plan *[09699]*. The plan shall provide a systematic approach by which the permittee shall at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit.

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

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

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

SPECIAL CONDITIONS

G. SCHEDULE OF COMPLIANCE

The Department is establishing a Schedule of Compliance for implementation of the following effluent limits and requirements established in this permitting action to provide for infrastructure, operation and maintenance upgrades as appropriate to insure compliance. The permittee shall adhere to the specific required tasks and deadlines detailed below:

1. Technology and Water Quality Based Effluent Limitations: The permittee shall ensure that the facility provides wastewater treatment equal to or better than the minimum treatment technology for all wastewater discharges and complies with all technology based effluent limitations, monitoring requirements, and operational requirements established in this permitting action **upon its effective date** and shall ensure that the facility complies with all new water quality based limits (total phosphorus) and toxicity based limits (formalin) **on or before September 1, 2008.**

2. Total Phosphorus and Formalin:

A. **On or before September 1, 2006**, the permittee shall submit to the Department for review and comment, facility wide plans (reports) to address operational and physical modifications necessary to ensure compliance with both the total phosphorus and formalin limits established in this permit *[34099]*. The plans shall encompass methods, technologies, and implementation schedules for attainment of the total phosphorus and formalin limits. For any alternatives involving design and construction, see Fact Sheet Attachment C for Department guidance on developing an Engineer's Facilities Planning Report.

B. **On or before March 1, 2007**, the permittee shall provide the Department with results of pilot testing and site investigations for the operational and physical modifications necessary to ensure compliance with the total phosphorus and formalin limits established in this permit. *[63899]*

C. **On or before September 1, 2007**, the permittee shall complete the design for any physical structure, equipment, and/or operational and physical modifications necessary to ensure compliance with the total phosphorus and formalin limits established in this permit, obtain all permits or licenses necessary for construction, and provide the Department with a report of the results *[54299]*.

D. **On or before July 1, 2008**, the permittee shall complete construction and initiate startup of the operational and physical modifications necessary to ensure compliance with the total phosphorus and formalin limits established in this permit *[91899]*.

E. **On or before September 1, 2008,** the operational and physical modifications necessary to ensure compliance with the total phosphorus and formalin limits established in this permit shall be fully operational and the revised total phosphorus and formalin limits shall be in effect *[52599]*.

SPECIAL CONDITIONS
G. SCHEDULE OF COMPLIANCE (cont'd)

3. **Landlord / Tenant Lease Agreement Renewal: On or before September 1, 2006,** the permittee shall submit to the Department evidence of renewal of the lease agreement between Union Water and Power Co. and ASM Rangeley that provides for the effluent dilution scenario described in Fact Sheet Section 6b *[54799]*. If the lease agreement is not renewed or relevant sections are altered, the Department will reopen the Permit pursuant to Permit Special Condition P to revise effluent limitations and monitoring requirements as appropriate.

H. ALTERNATIVE DISCHARGE STUDY:

On or before six-months prior to expiration of this permit, ASM Rangeley is required to submit to the Department for review, an Alternative Discharge Study (ADS) report for the Rangeley facility to determine if practical alternatives to the discharge exist. The ADS report shall evaluate wastewater treatment infrastructure, technologies, practices or other modifications that will result in the elimination of the discharge to the receiving water or improvement in the effluent quality, pursuant to guidance in Fact Sheet Section 9. *[34099]*

I. SETTLING BASIN CLEANING:

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

J. DISEASE AND PATHOGEN CONTROL AND REPORTING:

ASM Rangeley must comply with Maine Department of Inland Fisheries and Wildlife and Maine Department of Marine Resources salmonid fish health rules (12 MRSA, §6071; 12 MRSA, §§7011, 7035, 7201, and 7202, or revised rules). The cited rules include requirements for notification to the appropriate agency within 24-hours of pathogen detection. In the event of a catastrophic pathogen occurrence, the permittee shall submit to the Department for review, information on the proposed treatment including materials/chemicals to be used, material/chemical toxicity to aquatic life, the mass and concentrations of materials/chemicals as administered, and the concentrations to be expected in the effluent. The Department will address such occurrences through administrative modifications of the permit.

SPECIAL CONDITIONS

K. THERAPEUTIC AGENTS:

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

L. DISINFECTING/SANITIZING AGENTS:

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

M. MINIMUM TREATMENT TECHNOLOGY REQUIREMENT:

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

SPECIAL CONDITIONS

N. AMBIENT MACROINVERTEBRATE BIOMONITORING:

Based on available data, the Department is concerned with the effects of fish hatchery effluent discharges on rivers and streams in Maine and with the Rangeley River specifically. As macroinvertebrate communities provide indications of the overall ecological health of a receiving water, the Department has determined that biomonitoring is needed to better evaluate attainment of river and stream water classification standards and designated uses, resource impacts, and corrective measures when necessary. In order to address this need, this permitting action requires ASM Rangeley to conduct ambient macroinvertebrate biomonitoring **annually beginning calendar year 2006. On or before three months following the effective date of this permit,** ASM shall submit a biomonitoring plan for the Rangeley River to the Department's Division of Environmental Assessment for review and approval ***[34099].***

The plan shall be consistent with "*Methods for Biological Sampling and Analysis of Maine's Rivers and Streams*" (DEP #LW0387-B2002, August 2002) and shall include a scope of work and schedule, monitoring locations and maps, methods and materials, and reporting procedures for the biomonitoring program. Biomonitoring shall be conducted according to a Department approved monitoring plan. Results shall be reported to the Department in a biomonitoring report by December 15 each year ***[90199, 90299, 90399, 90499, 90599]***. If the receiving water is determined by the Department to be meeting criteria, standards, and designated uses for its assigned water quality class, the Department will reopen the permit pursuant to Permit Special Condition P, to modify or discontinue the biomonitoring requirement.

O. SALMON GENETIC TESTING AND ESCAPE PREVENTION

The US Fish and Wildlife Service and the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) formally listed the Atlantic salmon as an endangered species on November 17, 2000. Two significant issues of concern regarding the rearing of salmon in Maine involve the genetic integrity of the salmon and escape prevention to avoid impacts on native fish. As described in Section 16 of the attached Fact Sheet, these issues have been raised by USEPA Region 1, the US Fish and Wildlife Service and NOAA Fisheries as significant concerns for the Gulf of Maine Distinct Population Segment of Atlantic salmon (DPS).

Maine's Aquaculture General Permit (#MEG130000, Part II, Section I) and individual MEPDES Permits for marine aquaculture facilities contain requirements to address the genetic integrity of Atlantic salmon raised in Maine for aquaculture. The genetic requirements are implemented at the marine sites as well as at the hatchery and rearing facilities that raise and supply salmon for marine aquaculture. Additionally, MEPDES permits for salmon hatcheries prohibit the use of Atlantic salmon eggs or fish originating from non-North American stock at any facility in Maine in which there is a reasonable potential that escaped fish could reach DPS waters. ASM Rangeley's current operation involves raising Atlantic salmon for marine aquaculture. Thus, its eggs and fish are subject to the genetic requirements specified in General Permit #MEG130000 and/or individual MEPDES permits for the marine sites. The ASM Rangeley facility outfalls to the Rangeley River,

SPECIAL CONDITIONS
O. SALMON GENETIC TESTING AND ESCAPE PREVENTION (cont'd)

which then flows to Mooselookmeguntic Lake, Upper and Lower Richardson Lakes, the Rapid River, Umbagog Lake, and the Androscoggin River, which flows across Maine until it meets with the Kennebec River in Merrymeeting Bay. Salmon from ASM Rangeley would have to navigate each of these waters to encounter the nearest DPS water. Because of the unlikeliness of this occurring and because of the requirements already in place in the aforementioned permits, this permitting action is not establishing genetic testing requirements for the ASM Rangeley facility.

Maine's Aquaculture GP and individual MEPDES Permits for marine aquaculture facilities contain requirements for containment of salmon at the marine facilities, but no such provisions for hatcheries and rearing facilities. Aside from concerns with encounters between hatchery fish and native salmon in DPS waters, escaped fish can have adverse impacts on native fish populations and aquatic resources. Based on requirements established in the referenced aquaculture permitting actions and guidance developed by the Maine Aquaculture Association, in this permitting action, the Department requires that **the permittee shall employ a fully functional Containment Management System (CMS) at the facility** designed, constructed, and operated so as to prevent the accidental or consequential escape of fish to open water. The CMS plan shall include a site plan or schematic with specifications of the particular system. The permittee shall develop and utilize a CMS consisting of management and auditing methods to describe or address the following: site plan description, inventory control procedures, predator control procedures, escape response procedures, unusual event management, severe weather procedures and training. The CMS shall contain a facility specific list of critical control points (CCP) where escapes have been determined to potentially occur. Each CCP must address the following: the specific location, control mechanisms, critical limits, monitoring procedures, appropriate corrective actions, verification procedures that define adequate CCP monitoring, and a defined record keeping system. The permittee shall submit the CMS plan to the Department for review and approval **on or before six months following the effective date of this permit.** *[53799]*

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

SPECIAL CONDITIONS
O. SALMON GENETIC TESTING AND ESCAPE PREVENTION (cont'd)

1. The CMS shall be audited **at least once per year and within 30 days of a reportable escape** (more than 50 fish) by a party other than the facility operator or owner qualified to conduct such audits and approved by the Department. *[63899]* A written report of these audits shall be provided to the facility and the Department for review and approval **within 30 days of the audit being conducted** *[43699]*. If deficiencies are identified during the audit, the report shall contain a corrective action plan, including a timetable for implementation and re-auditing to verify deficiencies are addressed. Additional third party audits to verify correction of deficiencies shall be conducted in accordance with the corrective action plan or upon request of the Department. The facility shall notify the Department upon completion of corrective actions.

2. Facility personnel responsible for routine operation shall be properly trained and qualified to implement the CMS. **Prior to any containment system assessment** associated with this permit, the permittee shall provide to the Department documentation of the employee's or contractor's demonstrated capabilities to conduct such work. *[21599]*

3. The permittee shall maintain complete records, logs, reports of internal and third party audits and documents related to the CMS on site for a period of 5 years.

4. For new facilities, a CMS shall be prepared and submitted to the Department for review and approval prior to fish being introduced into the facility.

The facility shall report any known or suspected escapes of more than 50 fish within 24 hours to the Maine Atlantic Salmon Commission at 207-287-9973 or 287-9972 (Pat Keliher), Maine Department of Inland Fisheries and Wildlife at 207-287-5202 (Commissioner's office), USFWS Maine Field Office at 207-827-5938, and NOAA Fisheries Maine Office at 207-866-7379.

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

SPECIAL CONDITIONS

Q. SEVERABILITY

In the event that any provision, or part thereof, of this permit is declared to be unlawful by a reviewing court, the remainder of the permit shall remain in full force and effect, and shall be construed and enforced in all 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

FACT SHEET

Date: November 29, 2005

MEPDES PERMIT NUMBER: # ME0110116
WASTE DISCHARGE LICENSE: # W-004701-5Q-B-R
FORMER PERMIT COMPLIANCE SYSTEM TRACKING # MEU504701

NAME AND ADDRESS OF APPLICANT:

ATLANTIC SALMON OF MAINE, INC.
P.O. Box 380
Oquossoc, Maine 04964

COUNTY: FRANKLIN

NAME AND ADDRESS WHERE DISCHARGE OCCURS:

ATLANTIC SALMON OF MAINE, LLC
P.O. Box 380
Oquossoc, Maine 04964

RECEIVING WATER / CLASSIFICATION: Rangeley River
Class A, Tributary to Mooselookmeguntic Lake

COGNIZANT OFFICIAL AND TELEPHONE NUMBER:

Mr. Greg Lambert (207) 864-3664

1. APPLICATION SUMMARY

The applicant has applied for a renewal of Waste Discharge License (WDL) #W-004701-41-A-R, which was issued on December 12, 1986 for a five-year term. The WDL approved the discharge of a daily maximum of 15.5 million gallons per day (MGD) of fish hatchery wastewater to the Rangeley River, Class B (since upgraded to Class A) and a tributary to Mooselookmeguntic Lake, from a commercial Atlantic salmon hatchery and rearing facility in Rangeley (Oquossoc), Maine.

2. PERMIT SUMMARY

a. Regulatory - 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 lands. In those areas, the Department maintains the authority to issue WDLs pursuant to Maine law. The extent of Maine's delegated authority is under appeal at the time of this permitting action. From this point forward, the program will be referred to as the Maine Pollutant Discharge Elimination System (MEPDES) program and permit #ME0110116 will be utilized as the primary reference number for the Rangeley facility. The Department previously assigned the facility a Permit Compliance System tracking number of #MEU504701, but with issuance of a MEPDES permit, is reassigning the facility number to correspond to USEPA's 1987 designation. Any previous NPDES permits issued by the EPA will be replaced by the MEPDES permit upon issuance. Once retired, all terms and conditions of any NPDES permits are null and void.

b. Terms and conditions – This permitting action is similar to the December 12, 1986 WDL in that it is carrying forward:

1. the pH limit of 6.0-8.5 standard units.

This permitting action is different from the December 12, 1986 WDL in that it is:

1. eliminating the 15.5 MGD daily maximum discharge flow limit and establishing a monthly average discharge flow limit of 12 MGD;
2. establishing BOD and TSS monthly average and daily maximum concentration limits with a provision for the Department to establish new limits in the future based on technology performance analyses of the industry as a whole;
3. establishing BOD and TSS monthly average and daily maximum mass limits derived from the previous license effluent TSS limits;
4. establishing a year-round annual phosphorus mass limit based on the historical facility discharge for three years followed by a revised water quality based annual mass limit based on the proximity of Mooselookmeguntic Lake, and year round mass reporting requirements in lbs/month;
5. establishing a seasonal monthly average phosphorus concentration reporting requirement for three years followed by a water quality based monthly average phosphorus concentration limit based on the discharge to the Rangeley River, and a daily maximum concentration reporting requirement;
6. establishing seasonal monthly average and daily maximum orthophosphate mass and concentration monitoring requirements through 2006;
7. converting previous mass limits and reporting requirements from pounds of pollutant per 100 pounds of fish on hand to pounds of pollutant per unit of time;
8. establishing monthly average and daily maximum reporting requirements for mass of fish on hand;

9. establishing a daily maximum mass limit for formalin based on Department best professional judgement (BPJ) of best practicable treatment (BPT) and monthly average mass and concentration reporting requirements;
10. establishing a daily maximum concentration limit for formalin based on the previously established formaldehyde limit in other facility licenses for three years followed by a revised concentration limit based on Department BPJ of formalin toxicity;
11. establishing minimum monitoring frequency and sample type requirements based on Department BPJ;
12. eliminating ammonia nitrogen effluent limits and reporting requirements;
13. eliminating nitrate nitrogen effluent limits and reporting requirements;
14. eliminating settleable solids effluent limits and reporting requirements;
15. requiring a current facility Operation and Maintenance Plan;
16. establishing a schedule for implementation of revised phosphorus and formalin limits to provide for infrastructure, operation and maintenance upgrades as appropriate to insure compliance;
17. requiring demonstration of renewal of the lease agreement effecting effluent dilution;
18. requiring submittal of an Alternative Discharge Study report six months prior to permit expiration;
19. establishing requirements for settling basin cleaning;
20. requiring compliance with existing state salmonid fish health rules;
21. establishing requirements related to proper use and record keeping of therapeutic agents;
22. establishing record keeping requirements for disinfecting/sanitizing agents;
23. establishing BPJ derived minimum treatment technology requirements for the Rangeley facility;
24. establishing requirements for annual ambient macroinvertebrate biomonitoring; and
25. requiring a fish Containment Management System with provisions for auditing and reporting.

c. History: The most recent licensing/permitting actions include the following:

July 27, 1983 – The Maine Board of Environmental Protection issued WDL #4701 to Steve Swartz and Sam Hutchinson for the discharge of 0.45 MGD of treated fish hatchery wastewater from a former Maine Department of Inland Fisheries and Wildlife fish hatchery in Oquossoc (Rangeley) to the Rangeley River, Class B-1. The WDL was issued for a one-year term.

December 12, 1986 – The Department issued WDL #W-004701-41-A-R to Downeast Aquaculture for the discharge of a maximum of 15.5 MGD of fish hatchery and rearing facility wastewater to the Rangeley River, Class B, in Rangeley. The WDL was issued for a five-year term.

May 13, 1987 – The Department issued # W-004701-41-B-M, transferring the WDL for the Rangeley facility to Atlantic Salmon of Maine, Inc. The term of the WDL remained the same as in #W-004701-41-A-R.

December 18, 1987 - ASM applied to the USEPA for a NPDES permit for the Rangeley facility discharge, which was accepted by USEPA as complete on February 11, 1988 and assigned #ME0110116. USEPA issued a draft NPDES permit on June 27, 1989, but issuance of the final permit was contingent upon the Department certifying that the permit met applicable sections of the Federal Water Pollution Control Act and State laws. The Department has no evidence that the NPDES permit was ever issued.

September 30, 1989 – The Maine legislature amended the water classification statute (38 MRSA, Section 467.1.C, P.L. 1989 Chapter 228) to upgrade a portion of the Rangeley River from Class B to Class A. The upgraded section included the point at which the Rangeley hatchery discharges its effluent.

November 15, 1989 – The Department's Division of Environmental Assessment recommended to the Department's Division of (Water) Licensing and Enforcement that a pending draft WDL include a 125 kg/year (275 lb/year) phosphorus limit to prevent an increase in the trophic state of Mooselookmeguntic Lake. Reportedly, this recommendation was previously made in 1986, but mistakenly omitted from the 1987 transfer order.

May 24, 1990 – The Maine Department of Inland Fisheries and Wildlife issued a letter informing MEDEP that MDIFW discovered algae and (sphaerotilus) fungus in the Rangeley River and identified the cause as the ASM Rangeley facility.

April 17, 1992 – USEPA issued draft NPDES permit #ME0110116 for the Rangeley facility. USEPA and the Department then issued a joint public notice of a draft NPDES permit for the facility's discharge on November 7, 1992. Subsequent correspondence indicates that USEPA provided additional time for ASM to conduct ambient and effluent monitoring prior to issuance of the permit. The Department has no evidence that the NPDES permit was ever issued.

April 3, 1995 - The Department received an application from Atlantic Salmon of Maine LLC for renewal of the WDL for the discharge of fish hatchery wastewater from the Rangeley facility. The application was assigned #W-004701-WA-B-R.

January 24, 1996 - The Department interpreted the Legislature's intent in its September 30, 1989 upgrade of the Rangeley River in Rangeley to "grandfather" the discharge existing at that time from the Class A requirement that the effluent be of equal or better quality than the receiving water. See Fact Sheet Section 6 for clarification of this grandfathering.

July 2005 – The Department has reassigned the 1995 application as #W-004701-5Q-B-R to correspond with current Department coding protocols. The Department previously assigned the facility a Permit Compliance System tracking number of #MEU504701, but with issuance of a MEPDES permit, is reassigning the facility number #ME0110116, to correspond with USEPA's 1987 designation.

d. Source Description/ Facility Operation:

The Rangeley (Oquossoc) facility was originally constructed as a federal salmon hatchery in the early 1900s. In the 1950s, the facility was acquired and reconstructed by the Maine Department of Inland Fisheries and Wildlife for use as a fish hatchery and rearing facility. Throughout its history, the facility has alternated between periods of use and dormancy. The current ASM Rangeley facility is a salmon farming operation that rears Atlantic salmon from eggs to smolts over a 10-16 month process for use ultimately in human consumption.

Influent Water:

All influent water for the ASM facility is obtained from the Rangeley River, which outfalls from Rangeley Lake. All inlet pipes originate at the Rangeley Dam and draw water from a depth of 14-18 feet, depending on lake level. Water temperatures range from 0.5 degrees Celsius (C) to 27C (33 degrees Fahrenheit (F) to 80F). One 20-inch diameter cast iron pipe draws on the upstream side of the Rangeley Dam. The 20-inch line is fitted with a coarse screen of expanded steel mesh. The 20-inch line extends 300 feet to a main headbox valve house. Four other pipes originate at the Rangeley Dam from a 23-foot by 6-foot by 16-foot (16,500-gallon) gallery with one trash screen and a boom on the upstream side of the dam, and a second coarse screen in the gallery keyway. This second screen can be hoisted up inside the dam for a periodic cleaning. The four pipes that flow from this gallery are: one 8-inch diameter cast iron, two 8-inch diameter HDPE, and one 12-inch diameter cast iron pipe. The two 8-inch HDPE pipes are coupled with one 16-inch HDPE pipe approximately 30 feet down from the dam. All mentioned pipes run to the main headbox valve house and can be used to fill the headbox pump station.

All influent water flows into the approximately 105,000-gallon (20-foot by 35-foot by 20-foot) main headbox. This water can fill the main headbox by gravity or can be pumped by one of two 35 horsepower Cascade pumps. The water is pumped into the main headbox to increase the total head by 2 feet for increased flows when gravity is insufficient to meet the growout fields and hatchery demand. The water is then distributed to the facility, which includes the hatchhouse, startfeed, and growout fields. Influent water volumes in excess of ASM Rangeley's monthly average discharge flow of 12 MGD (8,333 GPM) are diverted to the Rangeley River via piping prior to contact with any fish or eggs at the ASM Rangeley facility.

Hatchery Operation:

Hatchhouse: ASM's hatchhouse consists of EWOS troughs, Heath tray stacks, and upwellers. All hatchhouse incoming water is sent from the main headbox to one of two or both bag filters, which vary in size from 10-micron to 800-micron depending on the time of year and amount of water being used during incubation/startfeed. The large bag filter has 12 filter bags, while the smaller unit holds 8 filter bags. The filtered water is then sent through a high intensity ultraviolet (UV) filter system comprised of 96 UV tubes before being pumped up to one of two or both hatchhouse headboxes. The large headbox has a 164-gallon capacity and has the capability of using heated or ambient water, while the smaller 55-gallon

headbox uses ambient temperature water only. During this cycle ASM has the option of increasing the temperature by the addition of heated water ranging from 1C to 8C (33F to 46F) for egg incubation and 13C (55F) for alevin incubation.

In November, green eggs are brought in from any one or a combination of egg suppliers in the northeast U.S. and Maritime Provinces and incubated in EWOS troughs, Heath stacks and upwellers. All incubation systems have the potential of holding green eggs through hatching and up to the point of first feeding. ASM has ninety-two fiberglass EWOS troughs (86-inches by 16-inches by 16.5-inches (98-gallons), with 4 bins/trough) using flows of 1-1.5 gpm each (maximum total 92-138 gpm, 13,000-200,000 gallons per day (gpd)). It also has eleven Heath stacks (16 trays/stack, total 176 trays) using flows of 3 gpm per stack (maximum total 33 gpm, 47,500 gpd), and five 3-foot tall by 1-foot diameter (17.5-gallon) circular plastic upwellers using flows of 6 gpm each (maximum total 30 gpm, 43,000 gpd). Fry generally hatch in February and are moved in March at a size of approximately 0.2 grams (0.007 ounces). A "full" hatchouse consists of up to 6 million eggs. Alternately, the facility can obtain eyed eggs (January) or fry (February-April) from any of the before mentioned suppliers and bypass the incubation period.

All effluent water from the hatchouse is pumped to a heat exchange unit to reclaim some of the water temperature, if heating is being performed. All hatchhouse effluent water is sent to a central facility sump at the end of the lower tank field where it awaits treatment before final discharge.

Rearing Operations:

Startfeed: ASM's startfeed facility is located in the hatchhouse building. Influent water is routed via a 237-gallon headbox to the startfeed facility, which consists of thirty 3-meter (10-foot) diameter by 4-feet deep circular (2,350-gallons each) and seven 2-meter (7-foot) diameter by 3.5-feet deep octagonal (1,000-gallons each) tanks. In March/April, after the alevin have used their yolk sacs, the fry are transferred to startfeed. The tanks are set up to receive heated water for fry growth but can also handle ambient water for growout. Flow rates through the 3-meter tanks begin at 10 gpm and are increased as required to continue good flow resulting in a clean environment for the fish. Flows are controlled through 3-inch valves. The flow rates through the 2-meter tanks begin at 5 gpm and are increased as required for good fish health husbandry practices. Startfeed capacity as described is around 2.6 million fry of approximately 0.2 grams (0.007 oz.) in size. Temperatures for startfeed are maintained near 13.5C (56F) until ambient temperature catches up with the heated temp, which historically occurs in May. The fry are graded in June-September and moved either to vacant inside tanks or to one of the outside tank fields. By September-October all fish are moved to the outside tanks, whereby they have achieved a size of approximately 10 grams (0.35 oz) in size.

When ASM uses heated water, a heat reclaim system is utilized. Effluent water is sent through a 90-micron drum filter before being collected in a 2,700-gallon (12-foot by 6-foot by 5-foot) sump where it is pumped up to the heat exchangers before being sent to the central effluent sump at the end of the lower tank field where it awaits final treatment and discharge.

Upper 6-Meter (M) Tank Field: ASM's upper 6M tank field consists of twenty 6-meter diameter by 2-meter deep circular fiberglass (15,000-gallons each) tanks. Water is provided to the upper 6M-tank field through one 18-inch diameter water line from the main headbox. Each 6M tank is fitted with 4-inch inlet valves and operates between 45-90 gallons per minute (gpm) depending on season and biomass. The 6M tanks are operated with a maximum of 20,000 fish per tank, which reach a maximum size of 45-75 grams (1.5-2.6 oz.).

Lower 6M Tank Field: ASM's lower 6M tank field consists of sixteen 6-meter diameter by 2-meter deep circular fiberglass (15,000-gallons each) tanks. Water is provided to the lower 6M tank field through two pipes from the main headbox. The 12-inch diameter cast iron pipe runs approximately 350ft to supply water to six of the tanks. A 16-inch diameter HDPE pipe supplies water to the remaining ten 6M tanks. The operating flows are similar to the upper field and range between 45-90 gpm depending on season and biomass. Flows are controlled by 4-inch valves on each tank. The 6M tanks are operated with a maximum of 20,000 fish per tank, which reach a maximum size of 45-75 grams (1.5-2.6 oz.).

During May-June and in October, the 10-16 month old salmon smolts, which are between 40-75 grams (1.5-2.6 oz.) and 5-8-inches long, are transferred to ASM's marine aquaculture netpens in Lubec, Machiasport, and/or Milbridge. As of the date of this Order, ASM states that the maximum amount of feeding occurs during September, consisting of approximately 650 pounds of food per day.

All wastewater from the facility is piped to a common concrete sump at the end of the lower tank field for treatment before final discharge, as described below.

e. Wastewater Treatment:

Wastewaters from the hatchhouse and startfeed facilities are routed to a 27-inch diameter SDR drainpipe. Wastewater from the upper 6M tank field is discharged through one 12-inch diameter and two 18-inch diameter SDR pipes, which combine their flows into the same above referenced 27-inch diameter drainpipe. Wastewater from the lower 6M tank field is discharged through two 10-inch diameter, one 12-inch diameter, and one 15-inch diameter SDR pipe, which combine their flows into one 24-inch diameter SDR drainpipe. All wastewater from the ASM facility flows via gravity to a central concrete sump at the end of the lower tank field, where a 35-horsepower Cascade pump routes it via a 20-inch diameter plastic pipe to a filter building pump. The central sump pump is variable speed and is controlled by an electronic eye located over the sump. Once in the filter building, the water channels off through a Y fitting which sends 50% of the water through the first 90-micron drum filter and the remaining 50% through a second 90-micron drum filter. The drum filters

are automatically backwashed with water from the main headbox, sending accumulated sludge to a 4,500-gallon concrete sludge raceway measuring 40-feet by 5-feet by 3-feet. Sludge raceway supernatant is continually pumped back to the drum filters for further treatment and to maintain sludge raceway space. When full, the sludge raceway is pumped out and sent to a local municipal wastewater treatment center and sprayed over fields.

Treated facility wastewater flows through a series of 4 concrete raceways measuring 118-feet long by 5-feet wide by 3-feet deep for additional settling before being discharged back into the Rangeley River, which flows to Mooselookmeguntic Lake. Raceways are cleaned once per year. The facility discharge peaks at 8,000 gpm (11.5 MGD) and equals the inlet flow.

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

3. CONDITIONS OF PERMITS

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

4. RECEIVING WATER QUALITY STANDARDS:

Maine law, 38 M.R.S.A., Section 467.1.C classifies the Rangeley River at the point of discharge as a Class A water. Maine law, 38 M.R.S.A., Section 465.2, describes the standards for Class A waters. The Rangeley River is also a tributary to Mooselookmeguntic Lake, a class GPA water as defined in 38 M.R.S.A., Section 465-A.

On September 30, 1989, the Maine Legislature amended the water classification statute to upgrade the portion of the Rangeley River including the Rangeley hatchery's point of discharge from Class B to Class A. On January 24, 1996, the Department interpreted the Legislature's intent to "grandfather" the discharge existing at that time from the Class A requirement that the effluent be of equal or better quality than the receiving water. See Fact Sheet Section 6 for clarification of this grandfathering.

Maine law, 38 M.R.S.A., Section 465.2(C) states that discharges into Class A waters *"licensed prior to January 1, 1986, are allowed to continue only until practical alternatives exist"*. Maine law, 38 M.R.S.A., Section 464.4.A(§§2,3,4) states, *"notwithstanding*

section 414-A, the department may not issue a water discharge license for...(a) *new direct discharge of domestic pollutants to tributaries of Class-GPA waters;...any discharge into a tributary of GPA waters that by itself or in combination with other activities causes water quality degradation that would impair the characteristics and designated uses of downstream GPA waters or causes an increase in the trophic state of those GPA waters;* (or a)... *discharge of pollutants to waters of the State that imparts...properties that cause those waters to be unsuitable for the designated uses and characteristics ascribed to their class".*

5. RECEIVING WATER QUALITY CONDITIONS:

The State of Maine 2004 *Integrated Water Quality Monitoring and Assessment Report* (DEPLW0665), prepared pursuant to Sections 303(d) and 305(b) of the Federal Water Pollution Control Act lists the receiving water (Assessment Unit ME0104000102, Segment ID 404R) in Category 2, Rivers and Streams Attaining Some Designated Uses – Insufficient Information for Other Uses (141.6 mile segment of Class AA and A waters). All freshwaters in Maine are listed as only partially attaining the designated use of recreational fishing due to a fish consumption advisory (Category 5-C). The advisory was established in response to elevated levels of mercury in some fish caused by atmospheric deposition. The Department has no information that ASM Rangeley causes or contributes to the non-attainment conditions listed in the 303(d)/305(b) report indicated above.

The Department's Division of Environmental Assessment (DEP DEA) conducted benthic macroinvertebrate biomonitoring in the Rangeley River in the vicinity of the ASM facility in 1989 and 1990. Results of the 1989-90 monitoring indicated that the macroinvertebrate community below the Rangeley facility only exhibited characteristics of Class B waters and did not attain its Class A classification standards. In 2003, DEP DEA again conducted benthic macroinvertebrate biomonitoring in the Rangeley River. DEP DEA indicated that macroinvertebrate communities upstream of the ASM Rangeley facility in 2003 were indicative of communities expected below a large lake outlet, which is the case at the facility. However, downstream of the facility, the macroinvertebrate communities still only meet Class B characteristics, with a shift to more tolerant filter feeders, reflective of a highly nutrient enriched system. Based on these results, the Rangeley River below the ASM facility is not attaining its Class A classification standards. The Department views the ASM Rangeley facility discharge as causing or contributing to this non-attainment status and is establishing effluent limitations, monitoring and operational requirements accordingly, including requirements for ambient macroinvertebrate biomonitoring (Permit Special Condition N). Further, the Department notes that past discharges from the Rangeley facility have resulted in algae and filamentous bacteria growth in the Rangeley River. The Department has no current evidence of either of these conditions, each of which is an indication of non-attainment of water classification standards. If either is observed in the receiving water, the Department will reopen the permit pursuant to Special Condition P to modify and/or establish limitations and requirements as necessary to correct the condition.

6. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS:

On June 30, 2004, USEPA finalized the Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (National Effluent Guidelines). The earlier September 12, 2002 proposed National Effluent Guidelines (NEGs) and subsequent working draft NEGs established numerical limitations for the discharge of TSS and requirements for facilities to develop and implement best management practices (BMP) plans for control of other pollutants.

In the final NEGs, EPA expressed effluent limitations in the form of narrative standards, rather than as numerical values. The final NEGs require facilities to develop and implement BMPs regarding operation and maintenance of the facility, as does this permitting action. EPA stated that it determined it more appropriate to promulgate limits "*...that could better respond to regional and site-specific conditions and accommodate existing state programs in cases where these appear to be working well.*" The final NEGs reference a section of the federal Clean Water Act inclusive of 40 CFR, Part 125.31(f), which states, "*Nothing in this section shall be construed to impair the right of any State or locality under section 510 of the Act to impose more stringent limitations than those required by Federal law.*" Section 510 states, "*Except as expressly provided in this Act, nothing in this Act shall (1) preclude or deny the right of any State...to adopt or enforce...any standard* o(r) *limitation respecting discharges of pollutants, or...any requirement respecting control or abatement of pollution; except that if an effluent limitation...or standard of performance is in effect under this Act, such State...may not adopt or enforce any effluent limitation...or standard of performance which is less stringent than the effluent limitation...or standard of performance under this Act; or (2) be construed as impairing or in any manner affecting any right or jurisdiction of the States with respect to the waters...of such States* ".

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

Between calendar years 2000 and 2002, eleven Maine fish hatcheries were evaluated to identify potential options for facility upgrades. All nine Maine Department of Inland Fisheries and Wildlife hatcheries were evaluated by FishPro Inc., while the two USFWS hatcheries were evaluated by the Freshwater Institute. Recommended wastewater treatment upgrades for each of the facilities included microscreen filtration of the effluent. Based on the information provided and Department best professional judgement (BPJ), the Department is specifying that minimum treatment technology for the Rangeley facility shall consist of treatment equal to or better than 60-micron microscreen filtration of the effluent, wastewater settling/clarification, and removal of solids (Permit Special Condition M, Fact Sheet Section 14). ASM shall provide treatment equal to or better than the BPJ minimum treatment technology and shall comply with all effluent limitations, monitoring requirements, and operational requirements established in this permitting action. Additional treatment may be necessary to achieve specific water quality based limitations.

In a January 24, 1996 letter, the Department addressed the issue of applicable effluent and water quality standards for those licensed discharges existing when a receiving water classification is upgraded from Class B to Class A, as was the case for the ASM Rangeley facility. Class A water standards (38 MRSA, Section 465.2(C)) require that the effluent from direct discharges licensed after January 1, 1986, must "be equal to or better than the existing water quality of the receiving waters" and that discharges licensed before January 1, 1986, "are allowed to continue only until practical alternatives exist". Based on the Department's 1996 letter and as clarified in 2004, for those existing licensed discharges the Department will apply the more stringent of the previous discharge license effluent limits or newly calculated BPT or water quality based effluent limits, taking into consideration past demonstrated effluent performance, in lieu of the "equal to or better" standard. The aquatic life, bacteria, and dissolved oxygen standards applicable to the previous discharge license (Class B standards) will be carried forward until the receiving water is able to meet Class A standards. The licensee/permittee must conduct an Alternative Discharge Study at least prior to each relicensing to determine if the discharge can be eliminated or if there is treatment technology and/or practices available that will result in improved effluent and receiving water quality, ultimately resulting in attainment of Class A standards. All new discharges of pollutants or increases in pollutants in a licensed/permitted facility's existing discharge, excluding flow, must meet all Class A standards.

a. Flow: The previous licensing action established a daily maximum discharge limit of 15.5 MGD and required the daily measurement of flow. The effluent flow limit applied to the combined discharge from four identified outfalls (#001-#004), however subsequently only one outfall, #004, was utilized. Review of five years of facility effluent data indicated an average discharge of 10.25 MGD, an average maximum discharge of 11.33 MGD, and a maximum discharge of 11.52 MGD. In this permitting action, the Department is establishing a monthly average flow limit of 12 MGD based on information provided by ASM Rangeley on facility operations, but eliminating the previously established daily maximum flow limit to provide the facility with operational flexibility. This permitting action requires daily estimation of discharge flow, consistent with actual facility practices and Department guidelines for wastewater treatment facility discharges.

b. Dilution Factors: Dilution factors associated with wastewater discharges are derived in accordance with freshwater protocols established in Department Regulation Chapter 530, Surface Water Toxics Control Program, October 2005 and methods for low flow calculation contained in Estimating Monthly, Annual, and Low 7-day, 10-year Streamflows for Ungaged Rivers in Maine (Scientific Investigations Report 2004-5026, US Department of Interior, US Geological Service). To calculate potential effects from a facility's effluent discharge, the Department utilizes the receiving water's available dilution during low flow conditions. The ASM facility discharges its treated effluent into a former raceway system, which flows into the side of the Rangeley River. Typically, these types of discharges do not achieve rapid and complete mixing with the receiving water since initial dilution is based on mixing resulting from the momentum of a discharge as it exits a discharge pipe (jet effect) as well as the dispersion of the effluent plume as it rises to the surface of the receiving water. Chapter 530.4(B)(1) states that analyses using numeric acute criteria for aquatic life must be based on ¼ of the 1Q10 stream design flow to prevent substantial acute toxicity within any mixing zone. The regulation goes on to say that where it can be demonstrated that a discharge achieves rapid and complete mixing with the receiving water by way of an efficient diffuser or other effective method, analyses may use a greater proportion of the stream design, up to including all of it. The Department previously assumed that ASM Rangeley's effluent receives a dilution of 2:1 in the receiving water. However, this information appears to be inaccurate.

The Rangeley Lake dam, associated structures, and the ASM Rangeley property itself, were previously owned by Union Water and Power Company (UWP). The dam is now owned by Florida Power and Light Company, subject to reservation of UWP's rights and responsibilities as landlord of the ASM Rangeley facility. Operation of the dam controls the amount of water available to ASM Rangeley and the Rangeley River and thus the available dilution. Pursuant to a November 26, 1996 lease agreement between ASM and UWP, "*Landlord acknowledges that at least 12,000 gallons per minute of water is required for the operation of the Hatchery and Landlord agrees to furnish this flow to the Leased Premises (and at all times to release into the river below the dam a quantity of water at least equal to the quantity of water actually furnished from time to time by Landlord from said Dam to the Leased Premises...*". This lease agreement was reissued on November 18, 2005 and shall remain in place through December 31, 2006 and potentially through four additional five-year renewal periods provided in the lease agreement. This agreement is interpreted by the involved parties to require the landlord to provide necessary flows up to 12,000 gpm (17.28 MGD) to ASM Rangeley and to provide a minimum of 12,000 gpm (17.28 MGD) to the Rangeley River. As noted in Section 2D above, influent water volumes in excess of ASM Rangeley's monthly average discharge flow of 12 MGD (8,333 GPM) are diverted to the Rangeley River via piping prior to contact with any fish or eggs at the ASM Rangeley facility. This additional influent flow of 5.28 MGD (3,667 GPM) is added to the passed flow of 17.28 MGD (12,000 GPM) to provide a total flow of 22.56 MGD (15,667 GPM) available for dilution of the facility effluent. Based on this information and using the monthly average discharge limitation of 12 MGD (8,333 gpm), the Department has calculated acute (1Q10), chronic (7Q10), and harmonic mean dilution factors for ASM Rangeley as follows:

22.56 MGD + 12 MGD / 12 MGD = 2.9:1

As stated above, ASM's discharge does not achieve rapid and complete mixing, thus the Department is utilizing the default stream flow of ¼ of the 22.56 MGD 1Q10 flow pursuant to Chapter 530 in acute evaluations, as follows:

5.64 MGD (Mod. Acute ¼ 1Q10) + 12 MGD / 12 MGD = 1.47:1

The permittee shall submit to the Department evidence of renewal of the lease agreement between Union Water and Power Co. and ASM Rangeley as provided for in Permit Special Condition G.

c. BOD and TSS: The previous licensing action contained effluent limitations and monitoring requirements for total suspended solids (TSS), but none for biochemical oxygen demand (BOD). The TSS limits consisted of a daily average mass limit of 120 lbs/day and a daily maximum mass limit of 156 lbs/day, each represented as the "*net increase over influent total suspended solids*". The licensee was required to monitor and report influent TSS. Eight-hour composite samples were required at frequencies of twice per month.

In licensing actions for twelve state and commercially owned fish hatcheries in 1999 and 2000, the Department established monthly average concentration limits for BOD and TSS of 2 mg/L based on the Department's best professional judgement of best practicable treatment (BPJ of BPT) limits. The BPT limits were developed based on the Department's analysis of effluent data from licensed fish hatcheries in Maine supplied through Discharge Monitoring Reports (DMRs). Based on this analysis, the Department determined that the concentration limits of 2 mg/L constituted achievable levels of these pollutants in fish hatchery wastewater. The Department also required that the BOD and TSS effluent mass be monitored and reported in pounds per 100 pounds of fish on hand. Through extensive facility inspections in 2002, the Department discovered significant variability in facility effluent sampling procedures, calling into question the validity of submitted DMR data, the previous data analysis, and the Department's previous assumptions and conclusions.

In the 2002 proposed NEGs, EPA recommended national TSS effluent limitations for re-circulating and flow-through hatcheries of various designs and levels of production. The most restrictive recommended limits were based on a secondary level of fish hatchery wastewater treatment and consisted of a monthly average limit of 6 mg/L and a daily maximum limit of 10 mg/L. The 2002 proposed draft NEGs did not propose to regulate BOD as EPA believed it would be managed through best management practices at the hatcheries and treatment for TSS.

According to EPA's final NEGs, effluent from fish hatcheries and rearing facilities can contain "*...high concentrations of suspended solids and nutrients, high BOD and low dissolved oxygen levels. Organic matter is discharged primarily from feces and uneaten*

feed". As stated in the 2002 proposed NEGs, "*elevated levels of organic compounds contribute to eutrophication and oxygen depletion.*" This is expressed as BOD "*...because oxygen is consumed when microorganisms decompose organic matter*". "*The greater the BOD, the greater the degree of pollution and the less oxygen available.*" The discharge of high BOD wastewater to small receiving waters with insufficient dilutions can result in formation of oxygen deficient areas known as sag points. Oxygen sag points represent both localized impacts to habitat and aquatic life as well as barriers to migration throughout the receiving water. Based on this premises and a long standing practice of regulating effluent BOD, the Department considers BOD a significant pollutant and therefore is establishing effluent limitations and monitoring requirements.

In this permitting action the Department is establishing a BPJ of minimum treatment technology for the Rangeley facility. (Permit Special Conditions M, Fact Sheet Section 14). BOD and TSS concentration limits of 6 mg/L for monthly average and 10 mg/L for daily maximum, as well as mass limits based on the Department's upgrade "grandfathering" determination described in Fact Sheet Section 6, shall be in effect for Outfall #004A. These concentration numbers are based on fish hatchery wastewater secondary treatment projections and the Department's judgement that effluent BOD should also be regulated. The Department has evaluated actual and projected post-facility upgrade effluent quality data for a significant number of fish hatcheries in Maine and determined that facilities incorporating the minimum treatment technology outlined can be expected to consistently meet the BOD and TSS concentration limits established in this permitting action. It is the Department's intent to re-evaluate and potentially revise limits in the future based on statistical evaluations of demonstrated performance of consistently and properly utilized treatment technology for the industry. The Department reserves the right to reopen facility discharge permits to establish these limits pursuant to Special Condition P of this permit.

For the purpose of comparison to limits presently being established in hatchery discharge permits, the Department converted the previously established TSS net mass limits to gross mass and concentration limits, utilizing the previous net mass limits of 120 lbs/day average and 156 lbs/day maximum, previous maximum licensed flow of 15.5 MGD, and a conversion factor of 8.34 lbs/ gallon. The Department reviewed past discharge monitoring report data for the ASM Rangeley facility and found ambient TSS levels of 1 mg/L.

An average concentration limit based on the previous WDL can be determined as:
120 lbs/day / 15.5 MGD / 8.34 lbs/gal = 0.928 mg/L + 1 mg/L ambient TSS = 1.928 mg/L

An average gross mass limit based on the previous WDL can be determined as:
1.928 mg/L X 15.5 MGD X 8.34 lbs/gal = 249 lbs/day

A maximum concentration limit based on the previous WDL can be determined as:
156 lbs/day / 15.5 MGD / 8.34 lbs/gal = 1.207 mg/L + 1 mg/L ambient TSS = 2.207 mg/L

A maximum gross mass limit based on the previous WDL can be determined as:
2.207 mg/L X 15.5 MGD X 8.34 lbs/gal = 285 lbs/day

Comparatively, mass limits based on concentration limits of 6 mg/L (monthly average) and 10 mg/L (daily maximum) and the 12 MGD monthly average flow established in this permitting action, would yield:

An average gross mass limit of:

6 mg/L X 12 MGD X 8.34 lbs/gal = 600 lbs/day

A maximum gross mass limit of:

10 mg/L X 12 MGD X 8.34 lbs/gal = 1,000 lbs/day

In terms of mass limits, pursuant to the Department's upgrade "grandfathering" determination described in Fact Sheet Section 6, the Department will apply the more stringent "converted" previous discharge license gross effluent limits in lieu of the "equal to or better" standard for Class A waters, considering the "converted" previous limits as BPJ of BPT. Stringently limiting mass discharges is doubly important considering the current macroinvertebrate non-attainment status and historical presence of *sphaerotilus* in the receiving water. The Department's Division of Environmental Assessment indicates that *sphaerotilus* is caused by an excess of carbon based pollutants, of which BOD is a measure. BOD and TSS effluent limitations are typically established as equivalent numerical limits because of roughly equivalent effluent results expected from standard means of wastewater treatment and because of the related nature of the pollutants. The derivation of mass limits for this facility is unusual, however. The previous WDL established net TSS mass limits and ambient levels of TSS have been determined to be 1 mg/L. Based on the procedure and calculations above, this permitting action establishes monthly average gross mass limits of 249 lbs/day and daily maximum gross mass limits of 285 lbs/day for TSS. However, available ambient data revealed ambient BOD levels of 2 mg/L. Therefore, the Department is utilizing 2 mg/L to calculate the BPJ of BPT BOD limit, yielding monthly average gross mass limits of 379 lbs/day and daily maximum gross mass limits of 415 lbs/day for BOD. All new proposed discharges of pollutants or increases in pollutants in the existing discharge, excluding flow, must meet all Class A standards. Therefore, if ASM wishes to increase the number and mass of fish on station, it may need to provide additional wastewater treatment that will hold effluent quality constant.

This permitting action establishes once per week effluent BOD and TSS monitoring on a year round basis based on the Department's BPJ of monitoring frequencies necessary to more accurately characterize facility effluent conditions.

d. Total Phosphorus and Orthophosphate: Phosphorus is a nutrient that encourages the growth of plants such as planktonic algae and macrophytes in northern waters. Oxygen levels in the water are reduced in the early morning hours due to extended nighttime respiration of algae. The decomposition of excess plant material further reduces the amount of available oxygen in the water through biochemical oxygen demand. Lowering

oxygen levels in a receiving water impacts the aquatic life in that water, making it unfit for some forms of life. Further, enrichment from excess nutrients, such as phosphorus, can result in reductions in aquatic macro-invertebrate species diversity, an indicator of the overall health of a receiving water. Excess phosphorus can also result in undesirable aesthetic conditions in a receiving water, impacting that water's ability to meet standards for maintaining recreational use, a designated use by law. Therefore, any increase in the phosphorus content in a receiving water has the potential to cause or contribute to non-attainment of classification standards. Maine law (38 MRSA § 464.4.A.4) states that *"...the Department may not issue a water discharge license for...the...discharge of pollutants to waters of the State that...cause those waters to be unsuitable for the designated uses and characteristics ascribed to their class"*. Phosphorus and orthophosphate concerns for the ASM Rangeley facility are two-fold in that the facility discharges its effluent to a Class A river that serves as a tributary to a GPA water. Both types of waters are sensitive to these pollutants, but must be managed differently. In November 1989, MEDEP DEA recommended that a pending draft WDL include a 125 kg/year (275 lb/year) phosphorus limit to prevent an increase in the trophic state of Mooselookmeguntic Lake. Reportedly, this recommendation was previously made in 1986, but mistakenly omitted from the 1987 transfer order.

Lake Concerns: Pursuant to information received from the Department's Division of Watershed Management (DWM), in implementation of the above standard, which is also applied to changes of land use in lake watersheds in section 465-A, the Department has recognized (1) that most lakes can accept some small increment of increased phosphorus load before they will demonstrate a perceivable increase in trophic state, and (2) that this increment would more likely be the result of the cumulative loading from a number of sources and not be provided by one source. This is the basis for the phosphorus technical guide (Phosphorus Control in Lake Watersheds: A Technical Guide for Evaluating New Development. DEP, 1992), which is used under Department Regulation, Chapter 500, Stormwater Management, the Site Location of Development Law (38 MRSA, §§ 481-490), and many town land use ordinances to define a maximum allowable increase in phosphorus load to each lake which will not risk a perceivable increase in trophic state; and to distribute that increase among proposed and anticipated development activities in the lake's watershed.

The 1992 phosphorus technical guide defines the maximum increment of increased phosphorus content that will not risk a perceivable increase in lake trophic state. This "acceptable increase in phosphorus concentration" is a function of the lake's current water quality, its potential for developing a significant phosphorus recycling problem, and whether or not it supports, or has the potential to support, a coldwater fishery. Since the Department never recommends a "low level of protection", the acceptable increase in phosphorus concentration ranges from 0.5 parts per billion (ppb) or lower for some severely blooming lakes to 1.5 ppb. The 1992 guide provides the best available guidance on how much lake phosphorus concentrations could be increased without causing a perceivable increase in trophic state, and has been used to define this concept for Site Location Law projects in lake watersheds since 1987. In the technical guide, an empirical input-output originally proposed by Vollenweider (1976) and refined by Larsen and

Mercier (1976), is used to estimate the increase in load that would result in a given increase in phosphorus concentration.

The technical guide recognizes that development of lake watersheds and the resulting nonpoint sources of phosphorus will continue over time, and that it is the cumulative effect of this additional development which will cause increases in lake trophic state. It also recognizes that long term moratoria on development are not viable, so the available phosphorus load cannot be granted to new development on a first come, first serve basis. The guide addresses this issue by allocating the available phosphorus load over all anticipated development, thus requiring all regulated new development to share in the burden of phosphorus mitigation by implementing stormwater management best management practices (BMPs) and/or reducing density.

The technical guide for evaluating development related stormwater impacts on lakes provides a quantifiable means for defining the increase in phosphorus load which would result in an increase in trophic state. The Department has worked to determine how much of this available load should be allocated to a single point discharge of phosphorus. The technical guide allocates load based on the size of the parcel being developed, the logic being that the more of the watershed one owns, the more opportunity one should have to generate stormwater related phosphorus loading to the lake. This allocation method does not work for point sources, however, since they almost always have an extremely small parcel size relative to the phosphorus content proposed in the discharge. For example, areal phosphorus (P) allocations for development typically range from 0.02 lb P/acre/yr to 0.15 lb P/acre/yr. In a watershed with an allocation of 0.10 lb P/acre/yr, a point source that discharged 100 pounds P per year would have to own 1,000 acres of land if it was held to the same criteria as development sources. Obviously, if the Department is to make licensed point discharges to GPA tributaries a feasible option, it must apply a different means of allocating the available phosphorus load than the one used in the Stormwater and Site Laws.

The Department has determined that the portion of the available phosphorus load that can be applied to a licensed, point discharge should be lake and watershed specific and should consider the magnitude and likely rate of growth of other activities in the watershed. The Department must also ensure that the phosphorus allocated to the single, or few, point discharges to a lake's tributaries is small enough so that it leaves reasonable room for all other parties with development, forestry or agricultural interests within the lake's watershed. The starting point of the rationale should be the maximum allowable increase in phosphorus load which will not risk a perceivable increase in trophic state as defined by the methodology discussed above and presented in the phosphorus technical guide. Based on these considerations, the Department's DWM recommends that the percent of the available phosphorus load allocated to point sources be a function of the relative growth rate in the watershed of the receiving GPA waterbody as follows: High Growth Rate - 10%, Medium Growth Rate - 15%, and Low Growth Rate - 20%. In high growth areas more individuals are competing for the available phosphorus load, thus the areal allocation is low, usually 0.02 – 0.05 lb/acre/yr and the limitations placed on individual developments are more stringent than in low growth areas. So, it is appropriate that the

limitations on point sources in high growth watersheds be more stringent as well. In the case of hatcheries whose water source is from a stream or other water source draining to the lake where it can be assumed the background phosphorus in the withdrawn supply water would have reached the lake anyway, the allowable increase in annual phosphorus discharge loads may be added to estimates of background load to calculate the allowable total discharge load.

Atlantic Salmon of Maine, Rangeley River, tributary to Mooselookmeguntic Lake

Mooselookmeguntic Lake is a large, mesotrophic, coldwater fishery lake. Its upper basin, also known as Cupsuptic Lake has a higher trophic state than the main basin. Recent Kendall Tau trend analysis of both basins indicate a trend of increasing trophic state expressed by a declining trend of secchi disc transparency. The trend in the main, lower basin is significant at the 95% level. The water quality category of the lake is moderate/sensitive and the level of protection high, resulting in an acceptable increase in lake phosphorus concentration of 0.75 ppb. The allowable increase in phosphorus load to the lake is 962.3 kg. Growth rate in the watershed as a whole is low, although it is comparatively high in the town of Rangeley. The watershed growth rate as a whole is low so the point source allocation is 20% and the resulting allocated load is 0.20 X 962.3 kg/yr or 192.4 kg/yr (424 lbs/year). Discharge data from the hatchery indicates substantially higher phosphorus loading than this limit would allow, so significant reduction in phosphorus discharge will be required.

The previous licensing action contained a daily maximum total phosphorus mass limit of 0.05 lbs/100 lbs fish on hand for the entire facility, which at that time encompassed four outfalls. Grab samples were required at frequencies of twice per month on a year-round basis. Many older Department hatchery licenses contained effluent limits that were based on 1974 draft EPA BAT guidelines for fish hatcheries with wastewater settling and sludge removal, which were never promulgated. However, although the units are the same, the previous phosphorus limits for the Rangeley facility vary from those that utilized the 1974 EPA guidance. Therefore, the origin of the Rangeley limits is assumed to be from Department BPJ at the time of issuance.

Permits issued by this Department impose the more stringent of the calculated water quality based or BPT based limits. Previously established limits or facility past demonstrated performance values are sometimes used as BPJ of BPT values when formal BPT based limits are absent. Several factors complicate the Department's ability to undertake this comparison, however. Any "lbs/100 lbs" values must be converted to standard mass values for comparison to the water quality based limits, which requires information on the fish biomass at the facility at the time. The 1986 WDL did not require the licensee to report the mass of fish on hand and the 1995 renewal application did not contain figures on biomass kept at the facility. The licensee, however, has provided biomass figures from 2001 through 2003, broken down by month. The maximum average biomass reported was approximately 114,000 lbs (51,690 kg). Using this information, the conversion to standard units is as follows:

114,000 lbs fish x 0.05 lbs/100 lbs = 57 lbs/day x 365 days/year = 20,805 lbs/year.

Comparison with actual effluent data is complicated by the fact that the licensee has been incorrectly reporting net phosphorus values instead of the gross values required by the previous WDL. The licensee, however, has provided gross effluent total phosphorus concentration values from January 2002 through August 2004. Within this timeframe, the largest annual average phosphorus discharge was 0.0539 mg/L for 2003, with the largest single discharge of 0.131 mg/L during October 2003. Using the 2003 average concentration value and the five-year average discharge flow of 10.25 MGD from facility DMR data, yields a rough estimate of an actual facility discharge of:

0.0539 mg/L x 10.25 MGD x 8.34 lbs/gal = 4.61 lbs/day x 365 days/yr = 1,682 lbs/yr

The calculated water quality based limits are more stringent than the BPJ of BPT based limits calculated from either previously established limits or facility past demonstrated performance values and are thus being established in this permitting action. The 424 lbs/year water quality based total phosphorus mass limit entails ASM Rangeley's allowable total phosphorus discharge contribution to Mooselookmeguntic Lake per year. The Department recognizes that the water source, the Rangeley River, contains ambient levels of phosphorus that would naturally enter Mooselookmeguntic Lake. The Department calculated ASM Rangeley's total allowable phosphorus discharge, including background levels of phosphorus in the source waters, to be 660 lbs/yr (299.5 kg/yr). A daily maximum mass limit is not being established to provide ASM with management flexibility to meet the yearly mass limits. However, this permitting action is requiring ASM Rangeley to report the mass of phosphorus discharged per month to provide for short term phosphorus management, as well as to identify either trends or effluent fluctuations related to seasonal and/or operational changes. The monitoring frequency of once per week is designed to ensure that representative facility and effluent conditions are captured. In that the water quality based mass limit is significantly more stringent than existing limits and may require improvements in wastewater treatment infrastructure and facility operations, this permitting action is establishing a Schedule of Compliance for its implementation, pursuant to 38 M.R.S.A., §414-A.2 and Permit Special Condition G.

From the effective date of the permit until August 31, 2008, this permitting action is establishing effluent mass limits of 1,682 lbs/yr based on estimates of recent facility effluent performance. From September 1, 2008 through permit expiration, subject to the Schedule of Compliance for facility infrastructure and operational upgrades, water quality based gross end-of-pipe limits of 660 lbs/yr are established.

River Concerns: For river and stream wastewater discharges, the Department typically utilizes a 0.035-mg/L instream phosphorus concentration limit (ambient water quality threshold) and the dilution provided in a receiving water to calculate water quality based effluent limits. Based on Department research, the AWQC of 0.035 mg/L corresponds to the maximum level at which algae blooms will not typically occur in a receiving river or stream under normal circumstances. As phosphorus is typically of concern under chronic discharge conditions, the 7Q10 dilution of 2.9:1 described in Fact Sheet Section 6b,

Dilution Factors, is being utilized in calculation of a water quality based effluent concentration limit of 0.1 mg/L. As this is a new water quality based limit, which may require improvements in wastewater treatment infrastructure and facility operations, this permitting action is establishing a schedule of compliance for its implementation, pursuant to 38 M.R.S.A., §414-A.2 and Permit Special Condition G. From the effective date of the permit until August 31, 2008, this permitting action is establishing concentration monitoring and reporting requirements. From September 1, 2008 through permit expiration, subject to the Schedule of Compliance for facility infrastructure and operational upgrades, water quality based gross end-of-pipe limits of 0.1 mg/L are established. In free flowing rivers and streams, phosphorus is typically a summer time concern for water quality. Therefore, in this permitting action the Department is revising the previously established year round phosphorus limits and monitoring requirements and establishing concentration limits and monitoring requirements that are in effect from June 1 through September 30 each year. This permitting action establishes a once per week monitoring requirement based on the Department's BPJ of monitoring frequencies necessary to more accurately characterize facility effluent conditions.

Both the Rangeley River and Mooselookmeguntic Lake will receive phosphorus discharged from the Rangeley facility. Both receiving waters are sensitive to the effects of this pollutant, therefore the discharge must be managed according to receiving water specific needs. This permitting action is establishing annual phosphorus mass limits based on water quality specific needs in Mooselookmeguntic Lake and seasonal phosphorus concentration limits based on water quality specific needs in the Rangeley River. Limits and monitoring requirements are expressed in gross end-of-pipe values.

It should be noted that as the concentration and mass limits are calculated based on different receiving waters, compliance with the established concentration limit will not necessarily result in compliance with the established mass limit. The permittee will need to actively manage its phosphorus discharge to achieve compliance and prevent adverse impacts in the receiving waters. All new proposed discharges of pollutants or increases in pollutants in the existing discharge, excluding flow, must meet all Class A standards. Therefore, if ASM wishes to increase the number and mass of fish on station, it may need to provide additional wastewater treatment that will hold effluent quality constant.

Orthophosphate is the portion of total phosphorous that is readily available for uptake by aquatic plants. It is important to be able to characterize the facility effluent in terms of the relationship between orthophosphate and total phosphorus in order to better understand the effects on the receiving water. Therefore, this permitting action establishes seasonal orthophosphate monitoring requirements from June 1 through September 30, 2006, with analysis to be conducted on the same sample as collected for the total phosphorous monitoring. Based on the results of monitoring, the Department may reopen the permit in the future pursuant to Special Condition P to address facility specific effluent limitations, monitoring and operational requirements.

e. Fish on Hand: This permitting action is establishing a reporting requirement for monthly average and daily maximum mass of fish on hand, intended to assist both the Department and the permittee in evaluating management practices at the facility and trends in effluent quality and receiving water impacts. This permitting action establishes once per week monitoring on a year round basis based on the Department's BPJ of monitoring frequencies necessary to accurately characterize facility effluent conditions.

f. Formalin: The previous licensing action contained no effluent limitations or monitoring requirements for formalin, however formalin is used at the facility. Fish hatcheries commonly use formalin based biocides for therapeutic treatment of fungal infections and external parasites of finfish and finfish eggs. Formalin products (Paracide-F, Formalin-F, or Parasite-S) contain approximately 37 percent by weight formaldehyde gas. USEPA Region 1 provided information related to formaldehyde concerns and limitations in hatchery permitting in Massachusetts specifying that formalin use should be consistent with U.S. Food and Drug Administration (FDA) labeling instructions (21CFR 1 § 529.1030).

However, toxicity data indicates that formalin is toxic to aquatic organisms at concentrations below FDA labeling guidelines. There are currently no ambient water quality criteria for formalin or formaldehyde established in Maine's Surface Water Toxics Control Program (Toxics Program, Chapter 584). Therefore, the Department is evaluating potential effects, effluent limitations, and monitoring requirements based on currently available information and best professional judgement.

EPA's hatchery permitting program in Massachusetts (EPA/MA) establishes acute and chronic water quality based effluent limits and requires Whole Effluent Toxicity testing in any calendar quarter in which formalin is used at a hatchery. EPA/MA's limits were developed based on work by Gerald Szal, Aquatic Ecologist, Massachusetts Department of Environmental Protection (October 24, 1990). Szal's methodology is based on review of a U.S. Fish and Wildlife document (Bills et al. 1977) which lists lethal concentrations (LC_{50}s) of formalin for a variety of fingerling fish. Two species of *Ictalurid* common to Massachusetts waters were selected as appropriate indicator species. Black bullhead had a 96-hour LC_{50} of 62.1 ul/l (mg/L) and Channel Catfish had a 96-hour LC_{50} of 65.8 ul/l (mg/L).

In addition to the Szal information, the Department reviewed studies provided by EPA's hatchery permitting program in New Hampshire (EPA/NH): Environmental Impact Assessment for the Use of Formalin in the Control of External Parasites on Fish, January 1995 (Dr. Stanley Katz, Rutgers University), a 1995 amendment for review of its use as a fungicide on eggs (Katz), and a 1981 Environmental Assessment titled Use of Formalin in Fish Culture as a Parasiticide and Fungicide (John Matheson, USDA, Bureau of Veterinary Medicine). The most conservative results indicate an LC50 of 1.15 mg/L of formalin for ostracods from a study by Bells, Marking, and Chandler (1977) included in the 1995 and 1981 studies above.

The Department also reviewed the results of formalin toxicity testing on EPA's ECOTOX database. Published toxicity data contained LC50 values ranging by several orders of magnitude for the same species in the same studies.

Maine's toxics rules (Chapter 530.1.B) state, "*No person may discharge any toxic substance in any amount or concentration...that may cause or contribute to the failure of any classified body of surface water to attain its existing and designated uses or to meet narrative or numeric water quality criteria.*". Further, Chapter 530.3 states, "*the Department shall establish appropriate discharge prohibitions, effluent limits and monitoring requirements in waste discharge licenses...*" as needed to ensure compliance with water quality criteria, existing and designated uses. The Department found a large range of toxicity data for formalin with significant variation between studies. The Department typically uses the most conservative data in order to ensure protection of aquatic life in Maine, however the range of published toxicity data was so extensive and inconclusive that the Department determined that a more focused study specific to Maine waters was warranted. Using methods similar to those specified in Chapter 530 for establishing site specific criteria, the Department contracted with a commercial laboratory (Lotic Inc., Unity, Maine) in October 2003 to provide information on the acute toxicity of formalin to the water flea (*Ceriodaphnia dubia*), a species commonly used in freshwater toxicity testing. All testing was performed by a certified laboratory according to standard methods. According to Katz (1995), formalin undergoes oxidation to formic acid followed by metabolic oxidation by microorganisms to form carbon dioxide and water. The half-life of formalin in water is estimated at 36 hours. Considering the nature of formalin and its intermittent use, the Department determined that acute criteria would be most applicable for comparison.

As reported by the testing laboratory, Lotic Inc., dosing rates in the Department's testing "*were initially established for a range-finding evaluation bracketed by* (formalin) *concentrations between 4.05 and 500 mg/L using 5 dilutions (0.3 dilution factor)*". Pursuant to standard practices, the dosing ranges were modified downward "*in subsequent tests to more accurately bracket appropriate endpoint determinations (A-NOEC* (acute no-effect concentration), *LC50)*". A total of four series of tests were conducted with the final two test series (tests) consisting of duplicate "definitive" tests utilizing a 0.5 dilution factor. Lotic reported that trend analyses revealed clear concentration-response relationships for the final three tests. Based on Lotic's experience, differences in survival for the two definitive tests "*are within the realm of normal variability for the testing of dilute organic pollutants*". "*For the two definitive tests, the A-NOECs (IC10s) ranged between 0.62 and 2.5 mg/L; LC50s ranged between 5.13 and 20 mg/L*". "*The A-NOEC for formalin (Parasite S) for C. dubia could be as low as 0.62 mg/L*". However, based on the limited number of tests performed and "*given the test variability in the data for the two definitive tests*", Lotic recommended that "*it would be prudent to average the A-NOEC values from these two evaluations (1.56 mg/L)*". "*This value will still be well below the most conservative LC50 value reported (5.13 mg/L)*". USEPA'S National Exposure Research Laboratory reviewed the testing results and found the variances observed to be appropriate. Further, USEPA found utilization of the 1.56 mg/L value as the A-NOEC to be a reasonable approach supported by test results in formulating an agency best

professional judgement determination. Therefore, based on the Department's best professional judgement, this A-NOEC is being utilized as the acute criteria for establishing a facility effluent limit. The Department notes that a permittee is free to undertake site specific and water specific toxicity analyses to provide additional information on the toxicity of formalin.

Multiplying the acute criteria by the low flow dilution factor of 1.47:1 described in Fact Sheet Section 6b, Dilution Factors, yields the following acute water quality based effluent limit:

1.56 mg/L (acute criteria) x 1.47 (dilution) = 2.3 mg/L acute formalin limit

Comparatively, previous licensing actions for other fish hatcheries in Maine established a requirement stating, "*at no time shall the discharge of Formaldehyde exceed 5 milligrams per liter*". This limit was based on the Department's best professional judgement at the time. As formaldehyde constitutes 37% of formalin, the 5 mg/L limit would equate to a 13.5 mg/L formalin limit. Parts per million (ppm) and mg/L are equivalent measurements.

Actual effluent levels of formalin can be calculated based on the use and dilution available at the facility. ASM Rangeley uses approximately 220 gallons of formalin per year for treatment of fungal infections during egg incubation and external parasites on the fish.

For egg treatments, ASM Rangeley administers formalin at a concentration of 1,800 ppm. The formalin is administered three times per week for 30 minutes between November and January directly to the hatchhouse headbox, thus all trays are treated. The maximum rate of water through hatchhouse structures is 138 gallons per minute (gpm) for the EWOS troughs, 33 gpm for the Heath tray stacks, and 30 gpm for the upwellers for a total flow of 201 gpm. The 201 gpm rate times the 30-minute treatment period yields 6,030 gallons of initial wastewater. The monthly average discharge limit of 12 MGD equates to a total facility discharge rate of 8,333 gpm. Multiplying 8,333 gpm times the 30-minute treatment period yields 249,990 gallons of total facility wastewater during the treatment period. The formalin would receive a dilution of 249,900 gal. – 6,030 gal. / 6,030 gal = 40.4:1. The end of pipe concentration from egg treatment can be calculated as follows:

1,800 ppm formalin / 40.4 = 44.5 ppm formalin discharged

For treatments on fish, ASM Rangeley administers formalin as needed at a dose of 200 ppm. The formalin is administered in the flow through a maximum of six, 6-meter diameter tanks at a time. For treatment, the volume of each tank is reduced in half to approximately 7,500-gallons per tank for a total of 45,000-gallons of formalin treated water. Incoming water replaces the formalin wastewater, which is blended into the full facility wastewater over an estimated 30-minute period and discharged to the receiving water. The end of pipe concentration from fish treatment can be calculated as follows:

249,990 gal facility wastewater – 45,000 gal formalin wastewater = 204,900 gal.
204,900 gal available facility wastewater / 45,000 gal = 4.55:1 dilution
200 ppm formalin / 4.55 = 43.9 ppm formalin discharged

Permits issued by this department impose the more stringent of the calculated water quality based or best practicable treatment (BPT) based limits. Although no formal BPT based limit has been developed for formalin, the Department considers a facility's discharge under best management practices to correspond to a BPJ of BPT. The calculated water quality based effluent limit is significantly more stringent than the potential effluent formalin concentrations from both egg and fish treatments and is therefore being established in this permitting action. As the calculated acute limit of 2.3 mg/L represents a new water quality based limit, the Department is establishing a schedule of compliance (Permit Special Condition G) pursuant to State Law, 38 M.R.S.A., Section 414-A.2 to address the investigation and implementation of operational and physical modifications necessary to ensure compliance with the formalin limits established in this permit. From the effective date of the permit until August 31, 2008, a formalin effluent limit of 13.5 mg/L, based on the formaldehyde limit contained in previous licensing actions for other facilities, shall be in effect. Beginning September 1, 2008, the 2.3 mg/L formalin limit shall be in effect. The Department has not determined an appropriate chronic limit for formalin use at this time.

This permitting action also establishes effluent mass limits pursuant to Department Rules, Chapter 523.6(f). The daily maximum mass limit is calculated based on the permittee's projected maximum amount of formalin used per day (0.9 gallons per 6-meter diameter tank times 6 tanks = 5.4 gallons) times the specific gravity of formalin (9.13 lbs/gal), resulting in a value of 49 lbs/day. This method was used to provide for flexibility in management of necessary treatments and to ensure that formalin is not discharged in toxic amounts. Throughout the term of the permit, the permittee shall report the monthly average effluent formalin mass and concentration. Effluent values shall be determined through calculations, as described in Special Condition A, Footnote 5 and Fact Sheet Section 17.

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

g. pH: The previous licensing action contained the requirement, "the pH shall not be less than 6.0 or greater than 8.5 at any time", with grab sampling required at a frequency of twice per month. This permitting action is carrying forward the 6.0-8.5 standard unit pH range limitation, but revising the minimum monitoring requirement to once/week. This effluent limit and monitoring requirement is consistent with the pH limit established in discharge licenses for other fish hatcheries and is considered by the Department as a best practicable treatment standard.

h. Ammonia: The previous licensing action contained a daily average ammonia nitrogen mass limit of 0.09 lbs/100 lbs of fish on hand and a daily maximum limit of 0.12 lbs/ 100 lbs of fish on hand for the entire facility, which at that time encompassed four outfalls. Grab samples were required at a frequency of twice per month. These limits were based on 1974 draft EPA Best Available Technology (BAT) guidelines for fish hatcheries with wastewater settling and sludge removal, which were never promulgated.

Water quality based limits for ammonia are calculated pursuant to USEPA guidance (1993) for sensitivities of salmonids and other cold water species. Ammonia toxicity varies with pH and temperature, therefore the Department and EPA evaluate criteria protective for both acute and chronic exposure at a pH of 7.0 and temperature of 25 degrees Celsius.

With dilution factors as calculated above (Fact Sheet Section 6b, Dilution Factors) and chronic and acute water quality based criterion shown below, monthly average (chronic) and daily maximum (acute) water quality based limits for ammonia are calculated as follows:

Chronic Criterion	Acute Criterion	Dilution Factors	Chronic Limit	Acute Limit
3.0 mg/L	24.1 mg/L	2.9:1 (c) 1.47:1 (a)	8.7 mg/L	35.4 mg/L

The Department reviewed five years of effluent data for the ASM Rangeley facility to determine whether the discharge exceeds or has a reasonable potential (RP) to exceed ambient water quality criteria (AWQC) for ammonia. Several factors complicated the Department's ability to undertake this comparison, however. Facility effluent data is recorded in "lbs/100 lbs" values, which must be converted to standard mass values then to concentration values for comparison to the water quality based limits, which requires information on the fish biomass at the facility at the time. The 1986 WDL did not require the licensee to report the mass of fish on hand and the 1995 renewal application did not contain figures on biomass kept at the facility. The licensee, however, has provided biomass figures from 2001 through 2003, broken down by month. The maximum average biomass reported was approximately 114,000 lbs (51,690 kg). Further complicating comparison with effluent data is the fact that the licensee has been incorrectly reporting net ammonia values instead of the gross values required by the previous WDL. However, past monitoring revealed an inlet value of 0.06 mg/L ammonia at the Rangeley facility, and that value can be used to convert net values to gross values.

Discharge monitoring report (DMR) data revealed an average of the net daily average ammonia values of 0.0262 lbs/100 lbs of fish on hand. DMR data further revealed an average of the net maximum ammonia values of 0.0313 lbs / 100 lbs and a maximum net ammonia value of 0.163 lbs / 100 lbs. To convert these values to conventional net mass values:

114,000 lbs fish x 0.0262 lbs ammonia /100 lbs fish = 29.87 lbs/day net average
114,000 lbs fish x 0.0313 lbs/100 lbs = 35.68 lbs/day average net maximum
114,000 lbs fish x 0.163 lbs/100 lbs = 185.82 lbs/day net maximum

Using the five-year average discharge flow of 10.25 MGD from facility DMR data, a conversion factor of 8.34 lbs/gallon, and the ambient ammonia value of 0.06 mg/L yields gross concentration values:

29.87 lbs/day / 10.25 MGD / 8.34 lbs/gal + 0.06 mg/L = 0.41 mg/L average
35.68 lbs/day / 10.25 MGD / 8.34 lbs/gal + 0.06 mg/L = 0.48 mg/L average maximum
185.82 lbs/day / 10.25 MGD / 8.34 lbs/gal + 0.06 mg/L = 2.23 mg/L maximum

The facility's average ammonia effluent value represents 4.7% of the calculated water quality based chronic value above, while the facility's average maximum and maximum effluent values represent 1.4% and 6.3% of the calculated water quality based acute value respectively. Based on this data, the Department has determined that the Rangeley facility discharge does not exceed or have an RP to exceed AWQC for ammonia. Therefore, the Department is eliminating ammonia effluent limitations and monitoring requirements in this permitting action.

i. Nitrate Nitrogen: The previous licensing action established a daily maximum concentration limit for nitrate nitrogen of 0.7 mg/L and required grab sampling at a frequency of twice per month. The origin of this limit is unknown but assumed to be from Department BPJ at the time of issuance. According to the Department's Division of Environmental Assessment, nitrogen is not a limiting nutrient in freshwater environments. Therefore, the Department is eliminating nitrate nitrogen effluent monitoring requirements in this permitting action.

j. Settleable Solids: The previous licensing action established a daily maximum limit for settleable solids of 0.2 ml/l and required grab sampling at a frequency of twice per month. The origin of this limit is unknown but assumed to be from Department BPJ at the time of issuance. In this permitting action, the Department is eliminating the effluent limit and monitoring requirement for settleable solids, based on the Department BPJ that effluent quality is appropriately maintained for fish hatcheries and rearing facilities through the limitations and monitoring requirements established for other parameters.

7. ANTI-BACKSLIDING

Federal regulation 40 CFR, §122(l) and Department rules Chapter 523.5(1) contain the criteria for what is often referred to as the anti-backsliding provisions of the Federal Water Pollution Control Act (Clean Water Act). In general, the regulation states that except for provisions specified therein, effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards or conditions in the previous permit. Allowable exceptions to the anti-backsliding provisions, which include when:

(1) material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation and

(2) information is available which was not available at the time of the permit issuance (other than revised regulations, guidance or test methods) and which would justify the application of less stringent effluent limitations at the time of permit issuance.

This permitting action eliminates previously established effluent limitations and monitoring requirements for several pollutants including ammonia, nitrate nitrogen, and settleable solids. The rationale for these actions is contained in Fact Sheet Section 6, *Effluent Limitations & Monitoring Requirements*. The Department believes that these actions are consistent with the anti-backsliding provisions.

8. ANTI-DEGRADATION

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

This permitting action eliminates previously established effluent limitations and monitoring requirements for several pollutants including ammonia, nitrate nitrogen, and settleable solids. The rationale for these actions is contained in Fact Sheet Section 6, *Effluent Limitations & Monitoring Requirements*. Based on the information provided in the referenced section, the Department does not consider these actions to result in increased discharges of pollutants and therefore does not consider the anti-degradation policy to be of issue.

9. ALTERNATIVE DISCHARGE STUDY

Maine Law, 38 M.R.S.A., § 465.2(C), states that discharges into Class A waters *"...licensed prior to January 1, 1986, are allowed to continue only until practical alternatives exist"*. Further, *"...the department shall require the applicant to objectively demonstrate to the department's satisfaction that the discharge is necessary and that there are no other reasonable alternatives available."* The Rangeley River in the vicinity of the Rangeley facility's discharge was upgraded from Class B to Class A in 1989. The Rangeley facility's wastewater discharge is subject to "grandfathering" to the extent outlined in Fact Sheet Section 6. However, the Rangeley facility is still subject to the above cited requirements.

Alternative Discharge Studies (ADS) typically evaluate the technical feasibility, estimated costs, and potential environmental impact from alternatives that will result in elimination of a discharge to a receiving water. Such alternatives include, but are not limited to, piping the discharge to a less restrictive receiving water, connecting the discharge to a municipal wastewater treatment facility, and constructing storage capacity and land applying effluent. The study shall include a material and cost breakdown of each identified option, additional equipment necessary, any needed real estate purchases or easements, and other issues and expenses. If no practical alternative for elimination of the discharge exists, then the ADS shall also evaluate modifications to existing wastewater treatment infrastructure and practices that will result in improvement of the effluent quality, such as additional or alternative treatment technology or methods, operational changes, seasonal modifications, discharge reduction, etc.

As described in Permit Special Condition H, on or before six months prior to expiration of this permit, ASM is required to submit to the Department an ADS report for the Rangeley facility to determine if practical alternatives to the discharge exist. The ADS report shall evaluate wastewater treatment infrastructure, technologies, practices or other modifications that will result in the elimination of the discharge to the receiving water or improvement in the effluent quality.

10. SETTLING BASIN CLEANING:

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

At the time of this Order, the ASM Rangeley facility has no separate effective settling basins or tanks. However, facility treatment upgrades are possible in the future. In this permitting action, the Department is requiring that any settling structures be cleaned when accumulated materials occupy 20% of a basin's capacity, when material deposition in any area of the basins exceeds 50% of the operational depth, or at any time that solids from the basins are contributing to a violation of permit effluent limits.

11. DISEASE AND PATHOGEN CONTROL AND REPORTING:

Maine Department of Inland Fisheries and Wildlife (MDIFW) Rules (Chapter 2.03-A) and Maine Department of Marine Resources (MeDMR) Rules (Chapter 24.21) state that *"the transfer and/or introduction of organisms fall within the jurisdiction of the Department of Marine Resources (12 MRSA, §6071) into coastal waters within the State of Maine and the Department of Inland Fisheries and Wildlife (12 MRSA, §§7011, 7035 and 7201, 7202) into public and/or private waters within the State of Maine. These rules are intended to protect wild and farmed salmonid fish populations and shall be applicable to all individuals involved*

in the culture and movement of live salmonids and gametes." Further, both agencies' rules define Diseases of Regulatory Concern as *"...infectious agents that have been demonstrated to cause a significant increase in the risk of mortality among salmonid populations in the State of Maine. Diseases of Regulatory Concern are classified by the Commissioner into three (3) disease categories: exotic, endemic (limited distribution) and endemic based on an annual review and analysis of epidemiological data."* The previous licensing action required the licensee to notify the MDIFW and MEDEP if any of a number of specified certifiable and emergency pathogens were detected at the facility. In this permitting action, as a salmonid aquaculture facility, ASM must comply with MDIFW and MeDMR salmonid fish health rules (12 MRSA, §6071; 12 MRSA, §§7011, 7035, 7201, and 7202, or revised rules). The cited rules include requirements for notification to the appropriate agency within 24-hours of pathogen detection. In the event of a catastrophic pathogen occurrence, the permittee shall submit to the Department for review, information on the proposed treatment including materials/chemicals to be used, material/chemical toxicity to aquatic life, the mass and concentrations of materials/chemicals as administered, and the concentrations to be expected in the effluent. The Department will address such occurrences through administrative modifications of the permit.

12. THERAPEUTIC AGENTS:

In the June 30, 2004 final NEGs, EPA requires proper storage of drugs, pesticides and feed and requires facilities to report use of any investigational new animal drug (INAD), extra-label drug use, and spills of drugs, pesticides or feed that results in a discharge to waters of the U.S.

The previous licensing action restricted the use of therapeutic agents to those listed in the application and required Department approval prior to use of any other therapeutic agents. This permitting action requires that all medicated fish feeds, drugs, and other fish health therapeutants shall be registered with USEPA as appropriate, approved by the US Food and Drug Administration (USFDA), and applied according to USFDA accepted guidelines and manufacturer's label instructions. Records of all such materials used are to be maintained at the facility for a period of five years.

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

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

Formalin: The discharge of formalin is addressed in Fact Sheet Section 6f, EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS, above.

Sodium Chloride: ASM Rangeley uses approximately 4,400 pounds of sodium chloride (NaCl, salt) per year for treatment of fungal infections or external parasites on fish. The salt is administered at a dose of 1,000 ppm (1 ppt). The salt is administered to a maximum of three, 6-meter diameter outside tanks per day. Each tank contains 15,000 gallons for a total of 45,000 gallons. Incoming water dilutes and replaces the salt wastewater over an approximately 30-minute period. The salt wastewater is blended into the full facility wastewater and discharged to the receiving water. The monthly average facility discharge limit of 12 MGD equates to a total facility discharge rate of 8,333 gpm. Multiplying 8,333 gpm times the 30-minute treatment period yields 249,990 gallons of total facility wastewater during the treatment period. The end of pipe concentration from fish treatment can be calculated as follows:

249,990 gal facility wastewater – 45,000 gal salt wastewater = 204,900 gal.
204,900 gal available facility wastewater / 45,000 gal = 4.55:1 dilution
1,000 ppm salt / 4.55 = 220 ppm salt discharged

The average concentration of NaCl in seawater is estimated at 35 ppt or 35,000 ppm. The Department's Division of Environmental Assessment (DEP DEA) reports that sampling results in Maine marine waters indicate salinity levels of approximately 30 ppt or 30,000 ppm. The DEA further reports that instream NaCl levels of between 1 and 5 ppt (1,000 and 5,000 ppm) can potentially result in harm to freshwater aquatic life. The effluent concentrations calculated above would be subject to further dilution upon entering the receiving water. In that the effluent NaCl concentrations are anticipated to fall below the 1,000 ppm level of concern, the Department is not establishing specific limitations or monitoring requirements for NaCl in this permitting action. Instead, use of NaCl shall be consistent with the use and record keeping requirements for therapeutic agents specified above.

13. DISINFECTING/SANITIZING AGENTS:

In this permitting action, the Department is requiring ASM Rangeley to maintain records of all sanitizing agents and/or disinfectants used that have the potential to enter the waste stream or receiving water, their volumes and concentrations as used and concentrations at the point of discharge, at the facility for a period of five years.

This permitting action only authorizes the discharge of those materials applied for, evaluated by the Department, and either regulated or determined to be deminimus in this permitting action or in subsequent Department actions. The discharges of any other agents or waste products not specifically included in this permitting action are considered unauthorized discharges pursuant to Permit Special Condition C.

Iodine: ASM Rangeley reports using approximately 10-gallons of iodine per year as a disinfectant for fish eggs, equipment, and for use in foot baths. All iodine is diluted to a concentration of approximately 100 parts per million (ppm) for use. All incoming eggs at the facility are placed in a sieve and immersed in the iodine solution for approximately 1-minute. The eggs are then placed in the various hatchery structures outlined in Fact Sheet Section 2d, with residual iodine solution on the eggs washed off into the full facility wastewater stream. The remaining iodine dip solution is then used to disinfect the hatchhouse floor, also ultimately entering the full facility wastewater stream. Iodine solution may also be used to disinfect facility equipment, as needed. Occasionally, iodine solution is utilized to disinfect the tires of vehicles from other fish hatcheries/rearing facilities upon entering ASM Rangeley, with the solution disposed of on the ground surface. Footbath wastes are dumped into a 90-foot long former raceway that is isolated from the facility wastewater stream and receiving water. The footbath wastewater is allowed to evaporate and is not discharged to the receiving water. Other disinfectants and sanitizing agents are used at ASM Rangeley, but only iodine solution is used in such a way that it may enter the facility wastewater stream. All iodine solution disposed of in the facility wastewater stream is further diluted in the full facility wastewater flow prior to discharge to the receiving water. At this time, there are no ambient water quality criteria for iodine. Therefore, this permitting action is not establishing effluent limitations or monitoring requirements for iodine.

ASM Rangeley reports that it may utilize a deminimus amount of chlorine in the form of one disinfectant puck to maintain the filter spray bars used in cleaning the drum filters. The spray enters and is diluted in the full facility wastewater flow. The Department considers the resulting chlorine discharge to be deminimus.

14. MINIMUM TREATMENT TECHNOLOGY REQUIREMENT:

Between 2000 and 2002, eleven Maine fish hatcheries were evaluated to identify potential options for facility upgrades. All nine Maine Department of Inland Fisheries and Wildlife hatcheries were evaluated by FishPro Inc., while the two USFWS hatcheries were evaluated by the Freshwater Institute. Recommended wastewater treatment upgrades for each of the

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

It is the Department's intent to evaluate effluent data and potentially revise technology based effluent limits in the future based on statistical evaluations of demonstrated performance of consistently and properly utilized treatment technology. The Department reserves the right to reopen facility discharge permits to establish these limits.

15. AMBIENT MACROINVERTEBRATE BIOMONITORING:

Based on available data, the Department is concerned with the effects of fish hatchery effluent discharges on rivers and streams in Maine and with the Rangeley River specifically. As outlined in Fact Sheet Section 5, *Receiving Water Quality* Conditions, DEP DEA conducted benthic macroinvertebrate biomonitoring in the Rangeley River in the vicinity of the ASM facility in 1989, 1990, and 2003. The results of these monitoring efforts indicated that the macroinvertebrate community below the ASM Rangeley facility only exhibited characteristics of Class B waters and did not attain its Class A classification standards. It is noted that ASM Rangeley currently holds significantly lower numbers of fish than during previous times and that the facility has been undergoing a review of its operational practices and infrastructure needs for the future.

As macroinvertebrate communities provide indications of the overall ecological health of a receiving water, the Department has determined that biomonitoring is needed to better evaluate attainment of water classification standards and designated uses, resource impacts, and corrective measures when necessary. In order to address this need, this permitting action requires ASM Rangeley to conduct ambient macroinvertebrate biomonitoring annually beginning calendar year 2006. On or before three months following the effective date of this permit, ASM Rangeley shall submit a biomonitoring plan for the Rangeley River to the Department's Division of Environmental Assessment for review and approval. The plan shall be consistent with "*Methods for Biological Sampling and Analysis of Maine's Rivers and Streams*" (DEP #LW0387-B2002, August 2002) and shall include a scope of work and schedule, monitoring locations, methods and materials, and reporting procedures for the biomonitoring program. Biomonitoring shall be conducted according to a Department approved monitoring plan. Results shall be reported to the Department in a biomonitoring report by December 15 each year. If the receiving water is determined by the Department to be meeting criteria, standards, and designated uses for its assigned water quality class, the Department will reopen the permit pursuant to Special Condition P of this permit, to modify or discontinue the biomonitoring requirement.

16. SALMON GENETIC INTEGRITY AND HATCHERY ESCAPE PREVENTION:

The US Fish and Wildlife Service and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) formally listed the Atlantic salmon as an endangered species on November 17, 2000. Two significant issues of concern regarding the rearing of salmon in Maine involve the genetic integrity of the salmon and escape prevention to avoid impacts on native fish.

On December 4, 2000, in regard to the Department's pending delegation to administer the NPDES Permit Program, USEPA Region I informed the Department that "*permits issued to freshwater hatcheries raising salmon will require that the facility be designed or modified to achieve zero escapement of fish from the facility*". The EPA also stated, "*The information contained in the* (US Fish and Wildlife and NOAA Fisheries) *Services' listing documents indicates that a remnant population of wild Atlantic salmon is present in...*" Maine waters "*...and that salmon fish farms and hatcheries are activities having a significant impact on the...*" Gulf of Maine Distinct Population Segment of Atlantic salmon (DPS) "*...through, among other things, the escape of farmed and non-North American strains of salmon which may interbreed with the wild Maine strains, compete for habitat, disrupt native salmon redds, and spread disease." "Based on this information, the Services have concluded that the escape of farm-raised salmon from fish farms and hatcheries is likely to significantly impair the growth, reproduction and habitat of wild salmon, thereby impairing the viability of the DPS." "EPA has analyzed current information, including these findings, and based on this information believes that this remnant population constitutes an existing instream use of certain Gulf of Maine rivers and considers that the above-described impacts to the population would be inconsistent with Maine's water quality standards. Assuming the information discussed above does not significantly change, EPA will utilize its authorities to ensure compliance with Maine water quality standards by ensuring that conditions to protect the remnant population of Atlantic salmon are included in NPDES permits for salmon fish farms and hatcheries, which are subject to regulation as concentrated aquatic animal production facilities." "In view of the substantial danger of extinction to the DPS described by the Services, it is EPA's view that proposed permits authorizing activities that would adversely affect the population, as described earlier in this letter, would be inconsistent with Maine's water quality standards and objectionable under the CWA.*"

Genetic Integrity: Maine's Aquaculture General Permit (#MEG130000, Part II, Section I) and individual MEPDES Permits for marine aquaculture facilities specify that "*no fish classified as non-North American...can be utilized to create progeny for stocking in net pens*". The Aquaculture GP and individual MEPDES Permits also establish requirements for annual certification of genetic evaluations, marking of fish to include the ability to identify the hatchery of origin, and employment of a fully functional Containment Management System (CMS) "*...to prevent the accidental or consequential escape of fish to open water*" at the marine facility. The marine facility CMS must be audited by a third party at least annually and a corrective action plan developed to address any identified deficiencies. The genetic requirements are implemented at the marine sites as well as at the hatchery and rearing facilities that raise and supply salmon for marine aquaculture. Additionally,

MEPDES permits for salmon hatcheries prohibit the use of Atlantic salmon eggs or fish originating from non-North American stock at any facility in Maine in which there is a reasonable potential that escaped fish could reach DPS waters. ASM Rangeley's current operation involves raising Atlantic salmon for marine aquaculture. Thus, its eggs and fish are subject to the genetic requirements specified in General Permit #MEG130000 and/or individual MEPDES permits for the marine sites. The ASM Rangeley facility outfalls to the Rangeley River, which then flows to Mooselookmeguntic Lake, Upper and Lower Richardson Lakes, the Rapid River, Umbagog Lake, and the Androscoggin River, which flows across Maine until it meets with the Kennebec River in Merrymeeting Bay. Salmon from ASM Rangeley would have to navigate each of these waters to encounter the nearest DPS water. Because of the unlikeliness of this occurring and because of the requirements already in place in the aforementioned permits, this permitting action is not establishing genetic testing requirements for the ASM Rangeley facility.

Escapement: ASM Rangeley raises Atlantic salmon from eggs to smolts over a 10 to 16 month cycle for use ultimately in human consumption. ASM indicates that the Rangeley facility is designed to prevent escapement of fish and has identified the following critical control points, pursuant to Maine's Aquaculture General Permit requirements. For hatchery functions (egg to 5 grams in size), ASM Rangeley maintains escape prevention screens through (1) the screens in the EWOS troughs, Heath trays, and upwellers themselves; (2) a screen prior to the heat exchange system when used or through a fiberglass mesh in the trough to trough connections when heat reclaim is not conducted; and (3) in the main facility drum filters. For larger fish (greater than 5 grams) functions, ASM Rangeley maintains escape prevention screens through (1) outlet screens on each smolt tank; and (2) in the main facility drum filters. ASM Rangeley plans to install an additional barrier in the form of a screen at the end of the former raceway that conducts the facility wastewater to the receiving water. When the raceway screen is installed, ASM Rangeley plans to remove the second hatchery function barrier noted above. ASM Rangeley reports that all devices are inspected daily. Any escapees would have to elude these measures to make it to the receiving water.

Maine's Aquaculture GP and individual MEPDES Permits for marine aquaculture facilities contain requirements for containment of salmon at the marine facilities, but no such provisions for hatcheries and rearing facilities. Based on requirements established in the referenced aquaculture permitting actions and guidance developed by the Maine Aquaculture Association, in this permitting action, the Department requires that the permittee shall employ a fully functional Containment Management System (CMS) at the facility designed, constructed, and operated so as to prevent the accidental or consequential escape of fish to open water. The CMS plan shall include a site plan or schematic with specifications of the particular system. The permittee shall develop and utilize a CMS consisting of management and auditing methods to describe or address the following: site plan description, inventory control procedures, predator control procedures, escape response procedures, unusual event management, severe weather procedures and training. The CMS shall contain a facility specific list of critical control points (CCP) where escapes have been determined to potentially occur. Each CCP must address the following: the specific location, control mechanisms, critical limits, monitoring procedures, appropriate corrective actions, verification procedures that define adequate CCP monitoring, and a defined record keeping

system. The permittee shall submit the CMS plan to the Department for review and approval on or before six months following the effective date of this permit.

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

1. The CMS shall be audited at least once per year and within 30 days of a reportable escape (more than 50 fish) by a party other than the facility operator or owner qualified to conduct such audits and approved by the Department. A written report of these audits shall be provided to the facility and the Department for review and approval within 30 days of the audit being conducted. If deficiencies are identified during the audit, the report shall contain a corrective action plan, including a timetable for implementation and re-auditing to verify deficiencies are addressed. Additional third party audits to verify correction of deficiencies shall be conducted in accordance with the corrective action plan or upon request of the Department. The facility shall notify the Department upon completion of corrective actions.

2. Facility personnel responsible for routine operation shall be properly trained and qualified to implement the CMS. Prior to any containment system assessment associated with this permit, the permittee shall provide to the Department documentation of the employee's or contractor's demonstrated capabilities to conduct such work.

3. The permittee shall maintain complete records, logs, reports of internal and third party audits and documents related to the CMS on site for a period of 5 years.

4. For new facilities, a CMS shall be prepared and submitted to the Department for review and approval prior to fish being introduced into the facility.

The facility shall report any known or suspected escapes of more than 50 fish within 24 hours to the Maine Atlantic Salmon Commission at 207-287-9973 or 287-9972 (Pat Keliher), Maine Department of Inland Fisheries and Wildlife at 207-287-5202 (Commissioner's office), USFWS Maine Field Office at 207-827-5938, and NOAA Fisheries Maine Office at 207-866-7379.

17. SAMPLE CALCULATIONS FOR EFFLUENT FORMALIN

To calculate the effluent formalin concentration, the permittee shall utilize the concentration administered, the volume of water to which the formalin is added, and dilutions provided from administration to end-of-pipe. Parts per million (ppm) and milligrams per liter (mg/L) are equivalent measurements. The Department's method of calculating effluent formalin levels at the Rangeley facility are contained in Fact Sheet Section 6.f. The following are examples of alternate methods to calculate effluent formalin levels.

For egg treatments, this example involves administration of 1,720 ppm of formalin for 15 minutes in flow-through water. It assumes a rate of water through the egg trays of 150 gallons per minute times the 15-minute treatment period yielding 2,250 gallons of initial wastewater. The total facility wastewater flow during the same 15-minute period can be calculated by taking a current discharge flow of 8,300 gpm times 15 minutes yielding 124,500 gallons. The formalin would receive an initial dilution of 124,500 gal. / 2,250 gal = 55.3:1. The 124,500 gallons of wastewater flows to the facility settling ponds, which have a total capacity of 969,000 gallons. The formalin would receive a second dilution of 969,000 gal/124,500 gal = 7.8:1. The end of pipe concentration can be calculated as follows:

1,720 ppm formalin / 55.3 / 7.8 = 4 ppm formalin discharged

For external parasite treatments on fish, the example facility administers formalin at a dose of 225 ppm. In this example, two 7,700 gallon pools are treated simultaneously (15,400 gal). The volumes of the two pools are gradually exchanged with fresh water and discharged into the 8,300 gpm facility waste stream over 112 minutes providing an initial dilution. The facility wastewater flows to the settling ponds, which provide a small second dilution. The effluent concentration can be calculated as follows:

8,300 gpm x 112 minutes = 929,600 gal facility wastewater during pool discharge
929,600 gal facility wastewater / 15,400 gal pool volume = 60.3:1 initial dilution
969,000 gal settling pond / 929,600 gal facility wastewater = 1.04:1 second dilution
225 ppm formalin / 60.3 / 1.04 = 3.6 ppm formalin discharged

For broodstock external parasite treatments, the example facility administers formalin to new broodstock fish at a dose of 25 ppm in flow-through water. This example assumes a flow through rate of 80 gpm times a treatment period of 6-hours (360 minutes) per day yielding 28,800 gallons of initial wastewater. The wastewater then flows to the 969,000 gallon capacity settling ponds. The effluent concentration can be calculated as follows:

969,000 gal settling pond / 28,800 gal. waste stream = 33.6:1 dilution
25 ppm formalin / 33.6 = 0.74 ppm formalin discharged

The effluent mass shall be calculated by multiplying the actual gallons of formalin used at the facility in a 24-hour period by a 9.13 lbs/gallon conversion factor based on the specific gravity of formalin. The conversion factor is derived by multiplying the weight of water

(8.34 lbs/gal) times the specific gravity of formalin as compared to water (1.095). If a facility administers 1.04 gallons of formalin in a day, the formalin mass can be calculated as follows:

1.04 gal formalin x 9.13 lbs/gallon = 9.5 lbs formalin discharged

In these examples, the various types of formalin treatments are not administered or discharged at the same time. If multiple discharges of formalin were to occur simultaneously, the facility would have to consider the cumulative formalin concentration and mass. These examples illustrate end-of-pipe (EOP) concentrations, which would be further diluted depending upon the facility's effluent dilution in the receiving water. If a facility receives a 3:1 effluent dilution in the receiving water, the calculated EOP concentration should be divided by three to provide the concentration in the receiving water after mixing.

18. DISCHARGE IMPACT ON RECEIVING WATER QUALITY:

As permitted, the Department has determined the existing water uses will be maintained and protected and the discharge will not cause or contribute to the failure of the Rangeley River to meet standards for Class A classification. In response to concerns with effects of fish hatchery effluent discharges on rivers and streams in Maine and limited available data, as outlined in Permit Special Condition N and Fact Sheet Section 15, ASM Rangeley is required to conduct ambient macroinvertebrate biomonitoring during the term of this permit. Data collected will be used to evaluate attainment of water classification standards and designated uses, resource impacts, and corrective measures when necessary.

If monitoring conducted pursuant to this permitting action or other efforts indicate that non-attainment conditions persist in the receiving water and that ASM Rangeley causes or contributes to those conditions, this permitting action may be reopened pursuant to Permit Special Condition P and effluent limitations, monitoring and operational requirements, and/or wastewater treatment requirements adjusted accordingly.

19. PUBLIC COMMENTS:

Public notice of this application was made in the Franklin Journal newspaper on or about March 30, 1995. The Department receives public comments on an application until the date a final agency action is taken on that application. Those persons receiving copies of draft permits shall have at least 30 days in which to submit comments on the draft or to request a public hearing, pursuant to Chapter 522 of the Department's rules.

20. DEPARTMENT CONTACTS:

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

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

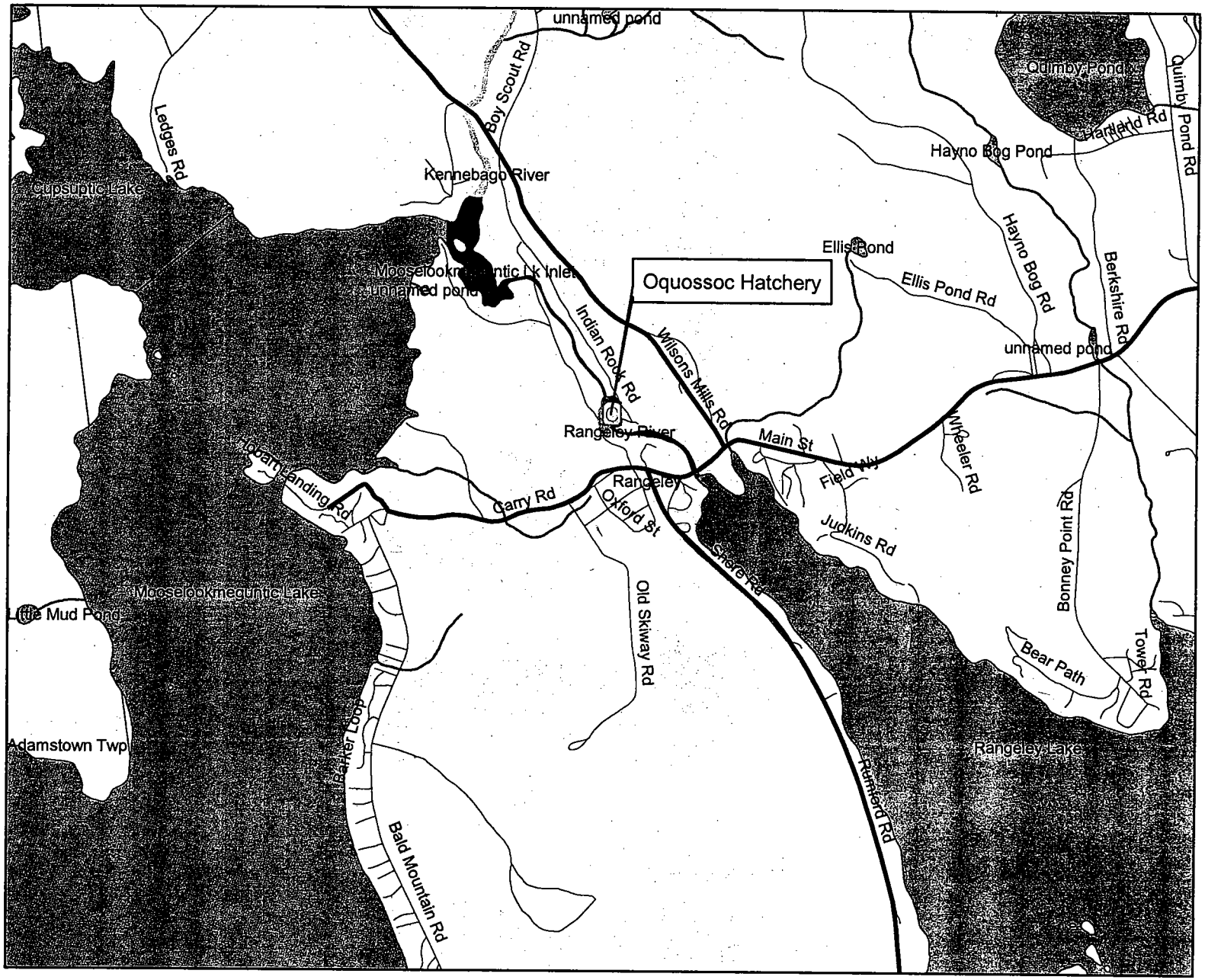
Telephone: (207) 287-6114
Fax: (207) 287-7191
email: Robert.D.Stratton@maine.gov

21. RESPONSE TO COMMENTS:

During the period of November 29, 2005 through December 30, 2005, the Department solicited comments on the proposed draft Maine Pollutant Discharge Elimination System Permit to be issued to ASM Rangeley for the proposed discharge. The Department did not receive any comments that resulted in significant revisions to the permit. Therefore, no response to comments has been prepared.

ATTACHMENT A

(Facility Location Map)



Legend

- Ponds_and_Lakes
- AA
- A
- B
- C
- AA
- A
- B
- C
- Wastewater_Facilities
- Wastewater_Outfalls

Major_Roads.lyr

JURISDICTION

- State aided
- State hwy
- Toll highway
- Roads_E911

0 0.25 0.5 1 1.5 2 Miles

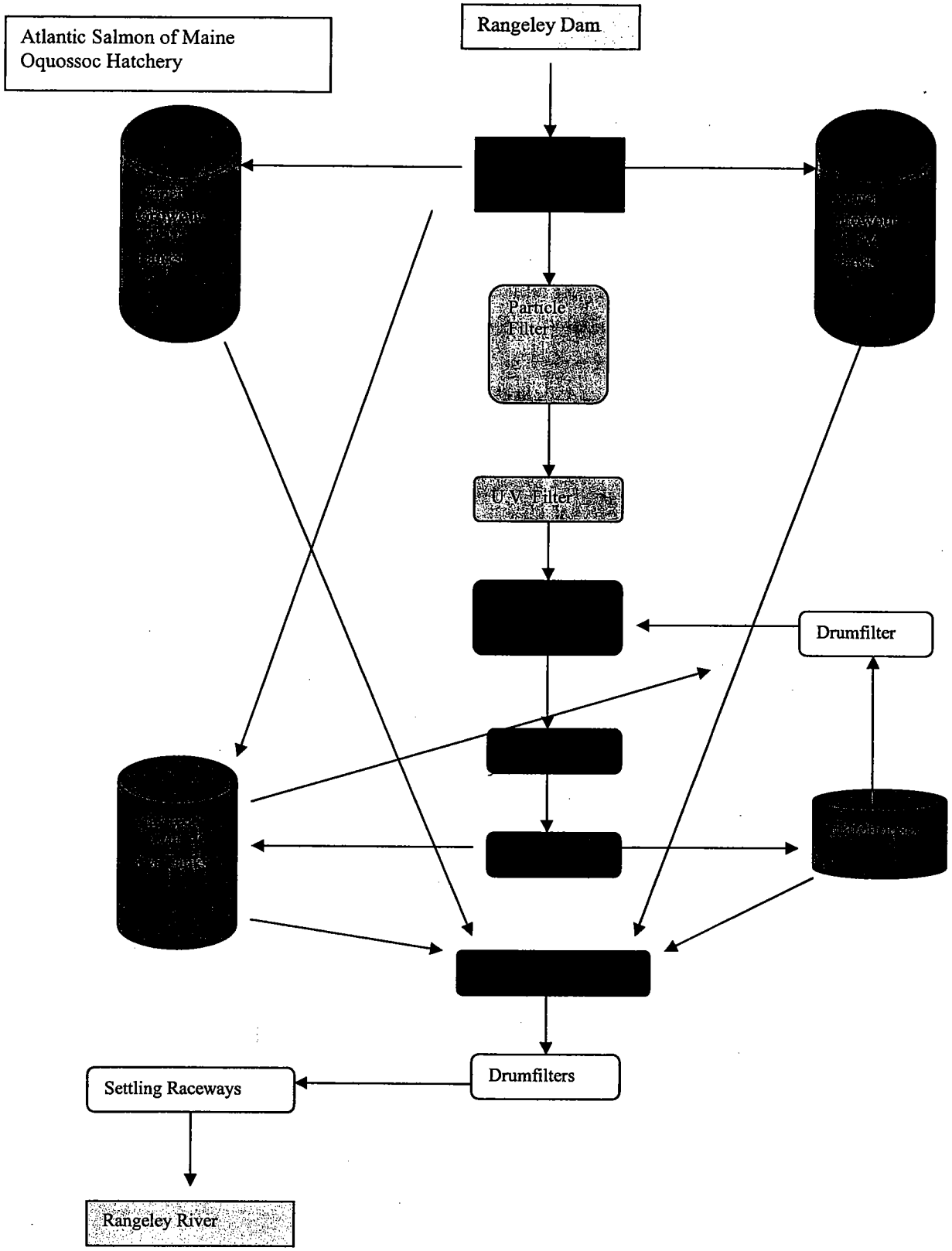
Rangeley, Maine

Map created by:
Bob Stratton
Division of Water Resource Regulation
Maine Department of Environmental Protection

DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OF MAINE

ATTACHMENT B

(Facility Site Plans)


Atlantic Salmon of Maine
Oquossoc Hatchery
Rangeley Dam
Particle Filter
U.V. Filter
Drumfilter
Drumfilters
Settling Raceways
Rangeley River

ATTACHMENT C

(Engineer's Facilities Planning Report)

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Land and Water Quality
Division of Environmental Compliance and Technical Assistance

INVESTIGATION PROTOCOL

All reports, plans and specifications shall be submitted by the dates specified in the permit. The documents submitted for formal approval shall include the engineer's report, final plans and specifications.

Procurement of Engineering Services.

This step requires retaining an engineering firm to plan, study, and design the project. The owner then hires one or more separate construction contractors to build the project; construction services, including construction management, are performed by the design firm. Start-up and operator instruction services are performed by the design engineer.

Engineer's Facilities Planning Report (Reports Required Pursuant to Permit Special Condition G).

The purpose of the report is to present in clear, concise form a description of the problem, alternative solutions examined, rejected and recommended, their technical and financial feasibility, and their environmental impact. The report should contain a detailed basis of design covering each component of the treatment process. The engineer's report should provide a description of alternative wastewater treatment processes screened for consideration, as well as factors considered in selecting processes. Such factors should include:

Compatibility with existing facilities
Flexibility for expansion
Ability to meet required permit limits
Suitability to handle probable variations in plant loading
Proven effectiveness
Land area requirements
Labor requirements
Construction costs
Operational costs
Energy requirements
Odor potential

System Alternatives: The engineer must carefully consider all feasible designs for the facility. The initial evaluation should focus on the technical appropriateness of all alternatives. Then, those deemed technically appropriate should receive in-depth technical and economic evaluation. The alternatives that should be evaluated include: source reduction through pollution prevention, storage and release to the receiving water as appropriate to reduce toxic amounts, conveyance of the waste to the POTW, pretreatment, conventional treatment and innovative/alternative treatment.

Conclusions, Recommendations, and Proposed Schedules: The engineer's facility planning report should clearly summarize the detailed evaluations contained in the body of the report. Provide a clear description of what is being proposed and propose an implementation schedule for approval. A typical schedule should reflect various future phases of the project such as required approvals, final design, bidding, contract award, construction and start-up. The facility shall be fully operational within the timeframes established in the permit.

Final Design Contract Drawings and Specifications

Plans should consist of general views, specific plan areas, elevations, sections, and details. Together with the specifications, these provide information for the contract and construction of the project. Complete technical specifications for the work should accompany the plans. Technical specifications should be clear and concise. They should include, but are not limited to, all construction information that the builder needs that is not shown on the plans, such as details of the design requirements, including the quality of materials, lists of required manuals, tools, chemicals, spare parts, and calibration equipment.