

Anatomy of Trackable and Enforceable License Conditions

Prepared by Working Group 2 - Coordination of State Mandates
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Background

Over the next decade about 220 hydropower project licenses are expiring. This group of projects has a combined capacity of about 22,000 megawatts, or 20 percent of the Nation's installed hydropower capacity. Collectively, these hydropower relicensing decisions will shape local communities, ecosystems and economies across the country.

The Federal Energy Regulatory Commission's (Commission) jurisdiction over these projects recognizes the requirements of a number of other participating federal agencies and their respective natural resources laws relevant to hydropower project relicensing. Certain laws impose procedural requirements on the relicensing process and others require authorizations in addition to the Commission's license.

The Interagency Task Force (ITF) to Improve Hydroelectric Relicensing Processes was created in response to this large number of relicensing applications requiring evaluation. The ITF, in turn, created five working groups to develop practical ways to improve the overall relicensing process among participating agencies. The Working Groups are charged to develop issue papers on the following tasks—

1. Coordinate Commission relicensing requirements with federal resource agency activities.
2. Coordinate Commission relicensing requirements with State agencies acting under authorities that give States the lead responsibility.
3. Understand and developing economic analysis methods and procedures for hydropower projects.
4. Facilitate constructive participation in the collaborative process.
5. Provide input into the Commission's *ex parte* rule reform.

This is the first report to be prepared by Working Group 2. This Working Group is charged

with recommending ways to better integrate Clean Water Act (CWA) Section 401 and the Coastal Zone Management Act (CZMA) into the hydropower relicensing process. The challenge of this Working Group is to find new, mutually agreeable ways to successfully achieve the goals of all applicable Federal, State and Tribal requirements.

This report details how CWA Section 401 conditions, CZMA certification, and license articles adopted under the Federal Power Act (FPA) may be drafted to achieve the desired goals. It should be noted that these suggestions are equally applicable for any condition required or recommended to become part of a license. Although beyond the scope of this paper, the Working Group also discussed other issues to better integrate State mandates into the Commission's relicensing process arising from the interaction among the CWA, CZMA, and the FPA. Addressing such issues helps to achieve consistency, improve communications, reduce duplication, and ensure that the best use is made of relevant expertise throughout the process.

Clean Water Act and Coastal Zone Management Act Conditions¹

Under Section 401(a)(1) of the CWA, applicants for hydropower licenses must obtain certification (or waiver from certification) that the activity will comply with applicable water quality standards from the agency administering Section 401. This agency will be either a State, Tribe, or the U.S. Environmental Protection Agency (collectively referred to in this report as "State"). Denial of certification precludes issuance of a license. A State may issue a certification with conditions necessary to meet water quality standards and other appropriate requirements of State law. These conditions must become conditions of the license; the Commission cannot delete or modify them. The majority of hydroelectric projects licensed by the Commission obtain State certifications that include such conditions.

Under Section 307(c) of the CZMA, applicants for licenses for hydropower projects affecting a State's coastal zone must provide the State and the Commission with a certification that the proposed project complies with the legally-binding policies in a State's coastal zone management program. The State must then notify the applicant and the Commission whether it concurs with or objects to the certification (concurrence being presumed if the State does not provide timely notification). The Commission cannot issue a license in the absence of State concurrence, unless upon appeal by the applicant the Secretary of Commerce overrides the objection. As a result of the certification process, a State may identify in its concurrence specific enforceable policies and management measures that are needed to ensure that the project is consistent with the State's coastal zone program.

¹The term "condition" in this document is used to refer to requirements under the CWA, FPA, and CZMA, and not as a legal term of art.

The incorporation of conditions into licenses issued by the Commission, the Commission's obligation to administer and enforce the license, and the State's on-going obligation to assure compliance with the conditions and measures designed to implement enforceable policies under the CWA and CZMA all raise the obvious need for States and the Commission to assure that conditions are drafted in a coordinated and mutually acceptable manner. It will be unnecessarily difficult and time consuming to meet resource objectives if the Commission cannot effectively administer State certification conditions.

For the purposes of this paper it is assumed that the Commission is the enforcement entity for conditions in a project license. The Commission enforces license conditions through scheduled and unscheduled on-site inspections, monitoring, self-reporting requirements, issuance of compliance orders, penalties, and in severe cases license revocation. It should be noted that state agencies are not precluded from using other available avenues of enforcement. Enforcement is critical, since state agencies need to have adequate assurance that a condition will be enforceable or they cannot certify compliance with water quality standards.

Desirable Characteristics of a Condition

A condition that the Commission can effectively administer is one that is "enforceable and trackable." Below we address the characteristics that increase the likelihood that conditions achieve the desired outcome. That is, the States' authority under the CWA and the CZMA, and the Commission's authority under the FPA, are exercised in a coordinated and consistent manner in order to efficiently achieve mutual goals.

Crafting conditions² which achieve the desired outcome is a challenge. The thirty to fifty-year licensing period for which the conditions apply necessitates that States and the Commission anticipate that conditions will be interpreted by staff who have no direct knowledge of their derivation. Providing sufficient clarity to achieve the desired outcome over such a long term requires adequate background to explain the intent and provide specific information to ensure clarity. Should additional details be required that cannot be specified in the condition, a plan that is subsequently reviewed and approved by a certifying agency and becomes part of the conditions may help to provide the desired specificity.

In general, conditions should answer the following generic questions: who, what, where, when, why, and how. This requires being as explicit as possible about the goal of the condition, criteria for measuring success, and required monitoring and reporting. Conditions should also be accompanied by

²Conditions are referred to as "articles" by the Commission.

supporting information that explains the need for the condition. Section 313(a) of the FPA requires that conditions of a license issued by the Commission be supported by substantial evidence contained in the record.

Identify Goals

Conditions and statements regarding consistency with a State's CZMA enforceable policies should clearly state the resource goal being pursued and, when possible, reference a statute or regulation. For example, a condition designed to support water quality characteristics for the propagation of cold water fish should state just that. Similarly, a goal may be to maintain water quality conditions similar to those upstream of the project reservoir. Other goals might relate to recreational boating, swimming, industrial use, and so forth. It also is important to differentiate between construction-related conditions and enforceable policies, such as turbidity monitoring, versus operational conditions and enforceable policies, such as flows for boating.

Success Criteria

Each condition component should define the criteria by which its successful implementation will be judged. For example, with the goal of cold water fish propagation, a condition could further specify that to maintain conditions conducive to the propagation of cold water fish, a dissolved oxygen (DO) concentration of 7.0 milligrams/liter (mg/l) must be maintained. In this example, maintenance of the 7.0 mg/l DO concentration is the criterion by which the Commission and resource agencies will determine if the condition achieves the resource goal of cold water fish propagation.

In other words, the criteria are the objective measure by which achievement of the resource goal is determined. The condition should reflect whether a criterion is an instantaneous measure (i.e., must be maintained at all times), a daily mean, a minimum or maximum value, or some other statistical measure. If the criterion is a reference to a narrative measure, without numerical component, it is important to identify the method and standard for judging the success of the licensee to meeting the condition. And, it is important to identify when, where, and how compliance will be determined, and which parties are legally authorized to enforce such compliance.

Monitoring Requirements

For some conditions, it may be appropriate to specify the type of monitoring needed to measure the criterion by which achievement of the goal can be judged. When determining the type of monitoring necessary, care needs to be taken to select the appropriate time and location of monitoring. This may be particularly true if multiple facilities or other actions in the watershed, including operation of the hydropower facility, have a bearing on whether the objective criteria can be met. In such a case, monitoring requirements should be crafted in a manner so as to distinguish between effects associated

with the operation of the hydropower project and effects associated with other actions in the watershed. Conditions should reflect the realities of the existing project. For example, does it make sense to monitor DO concentrations in the project tailrace if the project tailrace is not habitat for cold water fish? Similarly, does it make sense to monitor DO concentrations during the cold weather period when DO concentrations generally are well above the 7.0 mg/l criterion?

Other considerations may include the data collection method (grab samples vs. continuous data sampling), equipment calibration methods, sampling intervals, etc. A condition should also specify what type of monitoring records need to be maintained, and by whom. Furthermore, one may wish to consider a public benefit aspect of installing measuring devices, such as a staff gauge. Such devices may be able to be configured to provide both the public and regulatory agencies with visual information regarding the condition of the water body.

Reporting Requirements

Conditions also should detail the reporting (filing) requirements, and procedures that are necessary to follow if the goals are not being met. Consideration of reporting requirements should include who should receive the data report(s), what form the data report(s) should take, and when the report(s) should be filed. Further, the condition should explain what actions, including reporting requirements and mitigation, are to be taken if it is determined that the resource goal criterion is not met.

Checklist

Below is a checklist to help determine if a condition includes the language necessary to enable the Commission to track and enforce the objective(s) of a condition. Note that a condition may require a plan to help further define the objective.

Resource Goals

- Does the condition clearly identify the resource goal?
- Does the condition reference the supporting authority?
- Does the condition specify that it relates to construction, operation, or both aspects of the project?

Success Criteria

- Does the condition include a criterion by which to judge the implementation, success and/or effectiveness of the condition?

Monitoring Requirements

- Is monitoring needed? Will the monitoring provide the information necessary to

- determine the implementation, success, and/or effectiveness of the condition?
- Have the timing, location, data collection methods, equipment calibration methods, and sampling interval been considered?
- Are there public benefit aspects to the monitoring requirements?

Reporting Requirements

- Are reporting requirements detailed in the condition? (Who, what, when, where, and how?)
- Does the condition explain actions, including monitoring requirements and mitigation measures, to be taken if resource goal criteria are not met?

Examples of Certification Conditions with Desirable Characteristics

Conditions can be developed in a number of contexts: by States under CWA Section 401 and CZMA Section 307(c)(3), and by the Commission under the FPA. In each case, an effective condition will be one that is written clearly and reflects the characteristics and principles discussed above.

The following are examples of conditions that are, from the Commission's perspective, "enforceable and trackable" while, from the States' perspective, assuring that water quality and coastal resources will be protected against present and future unknowns. These examples address some, but certainly not all, potential certification conditions. The examples do, however, range from the standard condition necessary to protect DO to conditions addressing circumstances where there is insufficient information to determine the best water quality protection measures, or as may be authorized by law when the subject waters are reclassified or applicable water quality requirements are revised. The merits of any condition must, of course, be viewed in the full context of a license or certification proceeding. Therefore, the Working Group has not attempted to reach any conclusions regarding the merits of the conditions.

The examples are provided in the following order: two conditions with an analysis of how they might be made more easily trackable and enforceable, followed by a series of example conditions categorized by type. For each type of condition, a brief explanation is given regarding its usage.

Example #1a: Dissolved oxygen and temperature conditions shall be monitored from June through October at three locations: 1) the river channel directly below ABC Dam; 2) the powerhouse penstock and 3) the powerhouse tailrace. Sampling shall be done at no less than weekly intervals. The two samples at the penstock and powerhouse shall be concurrent. Annual data reports shall be filed no later than the end of the

sampling year. A quality assurance/quality control plan shall be filed with the Department³ within 60 days of issuance of the federal license. The sampling at the dam is deferred until the initiation of bypass minimum flows. The Department may suspend the data collection when there is an adequate data base to determine whether or not mitigatory action is necessary.

Examination of Example #1a reveals that this condition may be subject to differing interpretations, leading to enforcement difficulties. In addition, tracking this condition may be difficult. Thus this condition may not yield the State's desired outcome. First, the condition doesn't identify the resource goal. Second, the condition doesn't identify objective criteria to judge whether future actions are to be taken. Third, while the condition does identify monitoring locations, the description of the locations is vague, as is the reporting requirement. Finally, the condition fails to identify a specific date when monitoring will commence.

The following example, incorporating the desirable characteristics identified, is provided for comparison to the above condition.

Example #1b: For the purposes of maintaining a dissolved oxygen (DO) concentration of 7.0 milligrams per liter and temperature conditions consistent with Section 231.23 of the State water quality regulations.⁴ DO and temperature shall be monitored from June 1 through October 31 at three locations: 1) the river channel 100 hundred feet downstream of ABC Dam; 2) within the powerhouse penstock and 3) the powerhouse tailrace no more than 10 feet from the turbine draft tube. Sampling shall be done at no less than weekly intervals between 4:00 and 6:00 am. The samples within the penstock and the powerhouse tailrace shall be concurrent. Annual data reports shall be filed with the Department and Commission no later than the end of the sampling year (December 31). A quality assurance/quality control plan shall be filed with the Department and the Commission within 60 days of issuance of the federal license. The sampling at location 3 is deferred until the initiation of bypass minimum flows. The Department will suspend the data collection when there is an adequate data base to determine whether or not future action is necessary, or 5 years after issuance of the Federal license whichever is first.

The condition author may give consideration to incorporate the minimum elements of the quality assurance and quality control plan. In addition, any future action contemplated should be defined.

³Use of "Department" is in the generic. In real life application the specific name of the water quality department with jurisdiction should be identified

⁴The applicable section of a State's water quality regulations should be incorporated into the certification either in the condition itself or in the preamble as assumed here.

Example #2a: Within 90 days of the issuance of this certification, the applicant shall submit a plan for proper disposal of debris associated with project operation, including trashrack debris, for written approval by the Department. The plan shall include information on the design and materials used for flashboard construction at ABC Dam and the potential for the discharge of flashboards downstream.

This example requires the project applicant to file a plan with the State within 90 days of the issuance of the water quality certification. While such a requirement may be enforceable through other State means, the Commission cannot enforce this condition until it becomes part of a license. Therefore the condition author should tie the condition to issuance of a Commission license for the project. Other problems include: no indication of the type of debris covered by the condition; no indication of the type of information on the design or materials for the flashboards; no indication of the resource goal to be achieved; and, the criteria by which such achievement can be assessed.

Below Example #2b has been rewritten to address some of these shortcomings.

Example #2B: Within 90 days of the issuance of a license, the applicant shall file a plan for proper disposal of debris associated with project operation, including trashrack debris, litter, and trash for written approval by the Department. The department approved plan shall be filed with the Commission. The purpose of the plan is to protect downstream navigation and aesthetic quality. Proper disposal is defined as disposal in accordance with (State statute or regulation) § 548.1 through 548.9 of the State waste disposal regulations, as described in this certification. The plan shall include information on the design and materials (including flashboard composition, failure characteristics, and attachment method) used for flashboard construction at ABC Dam and the potential for the discharge of flashboards downstream, including the stage at which failure is expected to occur and the downstream fate of the failed flashboards. Upon approval of the plan by the Department and the Commission the licensee shall implement the approved plan.

Commission License Articles/CZMA and CWA Certification Conditions

The Commission and States include many types of environmental resource conditions in licenses and certifications, respectively, to address the changing environment or other unknowns. Below is a brief discussion of the types of conditions used.⁵

Standard Articles/Conditions:

⁵ The application of adaptive management and some examples which require future review and approval may not be applicable or legally allowed under the CZMA.

All hydropower licenses issued by the Federal Energy Regulatory Commission contain standard articles which have been written by Commission staff.⁶ The standard articles provide generic requirements that may be applied based on effects known to occur in association with particular types of projects or project attributes. A given standard article does not change from license to license.

The ordering paragraphs of the license identify which set of standard articles, also known as "L" form articles, are applicable to that license. There are 18 different sets of standard articles with anywhere from 15 to 37 individual articles in each set based on project size and location, and whether the project is constructed or un-constructed.

Certifications generally contain standard conditions addressing issues such as:

Construction and Operation: This type of condition requires the project to be constructed and operated as described in the water quality certification. Usually such a description comes from the license applicant and is designed to ensure that the project is constructed and operated as described in the application. Additional language may be added to ensure that if changes must be made after license issuance the certifying agency is given opportunity to review and approve such changes prior to their implementation.

Maintenance and Repair: This type of condition ensures that the licensee submit to the certifying agency for review any plans which may require alteration of normal reservoir pool levels or stream flow, or maintenance or repair that requires earth disturbing activities and may include dredging or silt removal operations, the licensee shall consult with the Department for review and approval. Consideration should also be made for the licensee take actions in emergency situations, such as flooding, which may affect public safety or the safe operation of the project.

Reservation of Authority: Provision such as this indicates that, when authorized by law, the terms and conditions of certification may be amended and additional terms or conditions added after notice and opportunity for hearing.

Compliance Inspection by Department: This type of condition allows the certifying agency to inspect the project in order to monitor the terms of the certification.

Posting of Certification: Such a condition requires that a copy of the certification be prominently posted within specific project facilities.

Approval of Project Changes: This type of condition notifies the licensee that any change

⁶18 CFR Part 2, General Policy and Interpretations, Section 2.9.

to the project that would have a significant or material effect on the findings, conclusions, or conditions of the certification must be submitted to the certifying agency for written approval prior to implementation.

Public Access: This type of condition requires the licensee to allow public access to the project area for utilization of public resources, subject to reasonable safety and liability limitations, and may address issues such as posting of access points. Consideration should be made to allow the licensee to deny access to project areas that would jeopardize public safety or the safe operation of the project.

Project-Specific or Special License Articles and Conditions

The Commission always includes project-specific requirements in a license, which are considered necessary to ensure the project is best adapted for the basin where it is located. These special articles are based on the record developed during the relicensing process, recommendations and mandatory conditions from resource agencies, the licensee's proposed measures, and Commission staff's independent evaluation. The articles normally require the licensee to take specific actions including: water quality monitoring, providing minimum flows, installation of special project facilities, and adjusting the mode of operation. CWA and CZMA certifications also commonly include project-specific conditions. These articles/conditions typically describe the objective to be achieved and a general approach for achieving that objective.

Example 1: Project Operation

The project shall be managed as a run-of-river operation. A "run of river operation" is defined as a hydroelectric project that operates without the use of reservoir storage. Such an operation maintains flows below the tailrace equivalent to the total inflow to the project on an instantaneous basis. Normally, the headpond elevation is stable.

Plan Articles

There are many situations that call for articles/conditions specific to a particular project, and which require review and approval after the license or water quality certification has been issued. Examples of each type of condition are provided below. Plans may be helpful when it is not always possible to determine precisely how to implement resource goals, compliance criteria, and reporting requirements. For example, it may be established that a particular flow rate in a project bypass is required to meet a particular resource goal. However, the most feasible method of flow release (such as through a gate, minimum flow turbine, or valve) has not been determined. In such a case, the licensee may be required to develop a flow release plan to achieve the desired flow rate that supports the resource goal.

A desirable plan should include a schedule which allows sufficient time for consultation with appropriate parties. A plan may also include a requirement for addressing how comments and recommendations received during the development of the plan are incorporated into the final plan, which will be submitted to the Commission and/or the state certification agency. And, of course, it is important to include a requirement that the approved plan be implemented and made subject to a reasonable monitoring program.

To be effective, a plan should include many elements: (1) the specific objective(s) of the plan, (2) general guidance on how the plan's objectives are to be achieved, (3) detailed schedule for specific actions, (4) provisions for adequate time for consulted entities to review and comment on the draft plan, (5) requirements that comments received should be included with the plan, along with a description of how the plan was modified (if any) to incorporate comments, (6) names of individuals, if any, who may approve extensions of time for filing the plan or implementing the required measures, (7) names of individuals who may approve, or modify and approve, the proposed plan, and (8) requirements that the licensee implement the measures proposed in the plan according to the approved schedule.

The details for achieving the objectives of special articles or conditions are often defined by several types of plans which the licensee may be required to file for approval as follows.

Single Plans: Often the project-specific article or condition requires the licensee to develop, in consultation with resource agencies, a detailed plan that provides site-specific details and a schedule for implementing the actions required to achieve the objectives described in the special article or condition. The detailed plan and the schedule for its implementation is approved, or modified and approved, by the Commission and/or certifying agency and becomes part of the license.

Example 1. Water Quality Monitoring Plan.

At least 90 days before the start of project operation, the licensee shall file with the [FERC and/or Department] for approval, a plan to monitor DO levels, in the [River], downstream of the project reservoir.

The licensee shall prepare the plan after consulting with the [identify appropriate agencies and interested entities that need to be consulted]. The licensee shall include with the plan documentation of consultation and copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the plan with the Department and FERC. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The plan shall include a schedule for submitting the monitoring results to the Department and FERC and the other consulted agencies and recommendations on needed measures to ensure maintenance of the State DO standard as measured at [location] located 0.25 mile downstream from the of the project reservoir. The Department reserves the right to require changes to the plan. Project operation shall not begin until the licensee and FERC are notified by the Department that the plan is approved. Upon Department approval, the licensee shall implement the plan, including any changes required by the Department.

If the results of monitoring indicate that changes in project structures or operation are necessary to ensure maintenance of State DO standards, the Department may direct the licensee to modify project structures or operation. The licensee shall, if necessary, obtain timely approval from other agencies to comply with the Department's directive.

Example 2. Downstream Fish Passage.

In order to prevent the entrainment of downstream migrating fish, the licensee shall, within 180 days of license issuance, submit a plan for the design and construction of downstream fish passage facilities at [project], including estimated design flows necessary for proper operation, to the Department of Fish and Wildlife for review. Any design submitted shall exclude fish with a minimum total length of 8 inches and shall include sufficient flow to provide a minimum depth of 12 inches in depth in any necessary conveyance structure and a minimum depth of 5 feet in any associated plunge pool. The design shall be capable of operating 24 hours per day between April 1 and May.

The plan shall include an implementation/construction schedule. The U.S. Fish and Wildlife Service and the Department of Fish and Wildlife shall be consulted during plan development. The plan shall include an erosion control and water management plan designed to assure compliance with water quality standards during construction.

The Department of Fish and Wildlife may suspend the operation of downstream passage facilities at any time based on its fishery management needs by sending written notice to the applicant and to FERC for its approval.

Example 3. Upstream Fish Passage.

In order provide for the passage of [fish species], the licensee shall, within 180 days of license issuance, submit a plan for the construction and operation of a Denil fishway at [project], including estimated design flows necessary for the passage of 20,000 fish between March 15 and May 15, and the passage of 15,000 fish between October 1 and November 15. Upstream fish passage facilities shall be installed so as to be operational within 18 months of final approval.

The plan shall include an implementation/construction schedule. The U.S. Fish and Wildlife Service and the Department of Fish and Wildlife shall be consulted during plan development. The plan shall include an erosion control and water management plan designed to assure compliance with water quality standards during construction.

The Department of Fish and Wildlife may suspend the operation of downstream passage facilities at any time based on its fishery management needs by sending written notice to the applicant and to FERC for its approval.

Example 4. Monitoring Plan for Reservoir and Flow Management.

The applicant shall file with the Department, for review and approval, within one year of the issuance of the federal license, whichever is sooner, a plan for monitoring instantaneous flow releases at the project, both below dams and below tailraces, and reservoir levels and inflows. Following approval of the monitoring plan by the Department, the licensee shall file the approved plan with the FERC for its approval. Upon Department and FERC approval the licensee shall then measure instantaneous flows and reservoir levels in accordance with the approved plan and provide records of such measurements on a regular basis as per specifications of the Department and the FERC. Upon receiving a written request from the licensee, the Department may waive this requirement, all or in part, for monitoring at this project provided the applicant satisfactorily demonstrates that the project will at all times be managed consistent with the requirements other requirements of this certification. If this requirement is waived, or waived in part, the licensee shall file the revised requirement with FERC for its approval.

Management Plan for [Project name] Gate Operation. The applicant shall develop a management plan to govern operation of the gates at [project name] to meet the goals of the water level management requirements set forth in Condition [#], and shall file that plan with the Department within 120 days of the issuance of the Federal license.

Implementation shall begin no later than the first loon nesting season following the approval of the Department and the FERC. The gates shall be automated as soon as practicable, but no later than 12 months following the approval of the plan by the Department and the FERC. In addition to the final automated operation, the plan shall address manual operation during the period prior to approval of the plan. The management plan shall include performance expectations for the equipment to be used and operating method proposed, both for interim and final operation; the plan shall include a calculation brief to support the projected performance. At its discretion, the applicant may elect to file the long-term plan separate from the interim plan, in which case the long-term plan will be due on or before January 1 following issuance of the license.

The stage data recorder at [project name] shall transmit real-time data to [location] to enable the operators to monitor water levels and perform gate adjustments as necessary for the protection of loon nesting, consistent with the provisions of Condition [#] above. Within 10 days of each two-week period during the month of April and May, the applicant shall file reports of [project's] hourly stages and outflows with the Department. Where the reservoir conditions are inconsistent with the goals of Condition [#], the report shall indicate the reason. Condition [#] allows the 100 cfs up-ramping requirements to be suspended as necessary to lower the reservoir to the loon nesting target elevation by May 1. As this is undesirable from a downstream resources perspective, the management plan shall be designed to minimize or eliminate the need to exceed the up-ramping requirement while achieving a high probability of attaining the target elevation.

Example 5: Rare, sensitive, protected species mitigation plans.

Tubercled Orchid. The applicant shall file with the Department for prior review and approval within 90 days of issuance of the license, a plan of mitigation (three copies) for the detrimental effect of increased flows in [project] bypass on the state threatened tubercled orchid (*Platanthera flava*). The applicant shall consult with the Department of Fish and Wildlife during the development and implementation of this plan, which shall commence with the first summer following final approval and shall include, but not be limited to the following steps:

FIRST SUMMER

1. Inventory the [project] bypass above [state] Route 9 in between June 15 and July 15 and during peak flowering periods when it is most visible.
2. Locate the tubercled orchid plants throughout the [project] and [project] bypass reaches in July when it is flowering and flag, if necessary, to facilitate re-identification in the fall.

FIRST AUTUMN

3. Conduct flow releases at the [project] bypass (70 cfs) and the [project] bypass (35 cfs) after September 15 and locate and mark all inundated individuals of the tubercled orchid. At the same time potential new habitat, based on the habitat characteristics where existing individuals were found during the first summer period identified above, will be identified and marked along the new edge of bank.
4. Create favorable habitat for the orchid in the areas previously identified along the new edge of bank by removing alders and any other reasonable means as required.
5. Collect seeds from the inundated orchids and sow along the new edge of bank using the best means available to insure germination.
6. Attempt to move all the orchids that will be inundated or harmed by whatever reasonable means available such as moving entire tussocks if all the plants it contains will be inundated. If individual plants are moved, as much soil as possible should be included, and the transplants should be covered with staked chicken wire to inhibit predation.

FIRST SPRING

10. Prior to mid-May and in coordination with the certifying agency, raise water levels up to the required minimum flows in the two bypasses.
11. Monitor the orchid populations on a yearly basis between June 15 and July 15 for the next five years and report the results to the certifying agency by October 1 of each.

Example 6. Recreation Plan.

The Licensee shall implement the Recreation Plan included on pages E-32 through E-64 of its license application filed with the Commission on January 1, 1999. The Licensee shall file with the Commission, for approval, at least 60 days prior to the start of any recreational facility construction, final design plans and details, which include the following:

- (1) final design drawings of all recreation enhancements;
- (2) a description of signs to be used to identify the public access areas;
- (3) drawings and specifications for each recreational enhancement;
- (4) an erosion control plan to address existing erosion at the project and measures to reduce erosion during recreation facility improvements.

The Licensee shall prepare the final design plans and details after consultation with the Department of Forests and Parks, Recreation Section, the Department of Environmental Resources, the Natural Resources Conservation Service, the National Park Service, and the U.S. Fish and Wildlife Service. The Licensee shall include with the plans documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the resource agencies listed above, and specific descriptions of how the agencies' comments and recommendations are accommodated by the plan. The Licensee shall allow 30 days for the agencies to comment and make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. No land-disturbing activities shall begin at the project until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission. Within 90 days of completion of construction of the approved recreational facilities authorized by this license, the Licensee shall file for approval, revised Exhibit G, to show those recreational facilities as-built, in relation to the project features.

Iterative Plans: Where conditions at the time of relicensing are changing so quickly that development of a long-term plan is infeasible, the licensee may be required by a special article to file a series of plans (every 5 or 10 years) over the course of the license, that revises the resource measure based on updated information, current resource needs, or recommendations from consulted agencies. The objectives proposed in the original license are used to determine the adequacy of the measures proposed in each plan. When each plan is filed with the Commission it is approved, or modified and approved, and becomes part of the license. A requirement for iterative review can also help meet States' need for ongoing review of certain operations or activities.

Example 1: Erosion Control Plan.

At least 90 days prior to initiation of any land disturbing activities, the licensee shall file with the Department an erosion control plan that describes the measures to be taken to control erosion and minimize the transport of sediment during construction and operation of project facilities. The plan must fully describe how construction and operation will be conducted so as to avoid erosion-related violations of State Laws 123.45 and 678.90. The plan, and schedule for its implementation, must be approved by the Department prior to initiation of any land disturbing activities. Implementation of this plan shall be based on actual-site geological, soil, and groundwater conditions and on the project design, and shall include, at a minimum, the following.

- (1) a description of the actual geological, soil, and groundwater site conditions;
- (2) final preventive measures based on the licensee's draft erosion and sediment control plan;
- (3) detailed descriptions, functional design drawings, and specific topographic locations of all control measures, including rip-rap placement, stream set back and stabilization of spoil material, and class of rock to be used;
- (4) a revegetation plan to include a complete prescription for revegetating all disturbed areas including: (a) locations of treatment areas; (b) plant species and methods to be used; (c) planting densities; (d) fertilizer formulations; (e) seed test results; (f) application rates; and (g) locations and density of willow plantings; and
- (5) a specific implementation schedule and details for monitoring, reporting and maintenance programs.

For the term of the license, every 5 years from the anniversary date of the initial plan, the erosion control plan must be revised and filed with the Department. The revised plans shall take into account existing project conditions, describe any changed land use, and describe the measures to be taken to control erosion and minimize sediment transport during specified activities. All erosion control plans are to be prepared in consultation with the Department and must be approved by the Department and FERC.

Adaptive Management Plans: -This type of plan provides the licensee and the resource agencies with discretionary authority to make real-time decisions regarding resource measures. A special article or certification condition may authorize the licensee to work cooperatively with certain resource agencies to implement a pre-approved range of resource protection measures. An example of this would be when and how releases are made from a project reservoir to protect and maintain habitat for an anadromous fishery, or to provide for recreational boating activity. Under this scenario, the Commission may define the total volume of water to be released, and rely on the licensee and the resource agencies to determine how best to release that water. The licensee and resource agencies work consensually to select and implement the best timing of reservoir releases to optimize use of flows. This process is feasible when:

- (1) the resource protection objectives can be clearly defined and are generally agreed to by the participants,
- (2) the licensee and resource agencies have established a record of communication and cooperation and are agreeable to this process, and

- (3) all entities necessary to implement the pre-approved resource protection measures are willing to participate.

The licensee and resource agencies have discretionary authority to take appropriate action to meet the quickly changing resource needs. The Commission is kept informed of these actions, however, as long as the actions are consensual and within the range initially contemplated, the licensee and resource agencies have considerable latitude to best utilize the available measures.

License Amendment

Modification of project facilities or operations authorized by the license requires a license amendment. The licensee may request to amend the license at any time. A license amendment may be as complex as the original licensing action or a simple administrative clarification. It should be noted that, unless provided for in the license, even modifications for which the licensee has the concurrence or approval of the resource agencies must receive Commission approval prior to implementation. License amendments may have utility for States if the State and applicant can agree on desired improvements as part of the amendment. Depending on the nature of the amendment, subsequent State certification and concurrence may be required.

License Reopeners

Some standard articles in a license authorize the Commission, on its own initiative, or upon the request of an entity other than the licensee, to determine if changes in the project license are necessary and appropriate. If, after notice and opportunity for hearing, the Commission determines that changes in project facilities or operation are necessary, the Commission may amend the license to require the licensee to implement these changes. These standard articles are very specific about when and under what circumstances a license may be reopened. The Commission's authority to reopen a license varies from license to license and is limited by the provisions of the specific license. License reopeners also may be used in certification conditions to put the licensee on notice that one of the mechanisms available to a State to ensure compliance with state water quality standards is to ask the Commission, as a matter of its authority, to reopen the license.

Reservation of Authority under the CWA⁷

⁷ Workgroup members disagree on what to call the category of condition that allows for changes to project management requirements in response to revisions of water quality standards that occur after issuance of a license. Some members believe that these conditions represent another form of adaptive management, while others define them as reservations of authority, or think they are most appropriately accomplished via a license reopener.

While a water quality certification is being prepared, it may be evident that additional information and decisions will be required by the State after issuance of the certification or the license. This situation can arise for a number of reasons, including: an inability to determine the most effective, least-cost mitigation required; a pending change in the status of beneficial uses; a pending change in water quality standards; or a pending change in load allocations due to development of a Total Maximum Daily Load (TMDL) for the basin.

In the example below, a TMDL based on basin-wide temperature modeling was being developed, but its completion was scheduled for a year after the deadline for issuing a 401 decision. An adaptive management condition was needed to implement any appropriate thermal load reductions identified by the TMDL.

Example: TMDL requirements.

The applicant may be required to release bypass flows in addition to those required in [previous conditions to this certification] to meet water quality standards in accordance with the following stipulations.

When a TMDL for temperature in the portion of the [River] affected by the project is approved and adopted, the Department will determine if the required thermal reductions from the project are adequate to comply with the TMDL. If the Department determines that the thermal reductions are not adequate to comply with the TMDL, the Department may require the applicant to release additional flows in the bypass reach subject to the following limitations:

- 1) The Department may require increased flows during the period July 1 through October 15 to achieve the temperature load allocation or to meet the applicable temperature criteria.
- 2) Any required increases in bypass flows shall be made in 50 cubic foot per second (cfs) increments. Flow increases are limited to 50 cfs increments to allow for water-temperature monitoring to determine the effects of the flow increases on river temperatures.
- 3) The Department will specify monitoring and reporting requirements to be met by the applicant and specify a mechanism for agreeing on future flow increases if warranted by monitoring results.
- 4) Follow-up conditions that outline Department actions that would apply in the case where unexpected temperature responses occur.

Definitions for Selected Terms Used in this Paper

Those writing conditions to protect water quality or coastal zones may wish to define terms used in the conditions, and provide the definitions along with the conditions, to ensure all parties interpret the conditions as intended. The terms below are not defined as legal “terms of art”, but are given their colloquial meanings. They are presented here because past experience shows that they are subject to differing interpretations, and warrant definition within a license. Those writing certifications should feel free to define terms as best suits the particulars of the facility under review, taking into account applicable legal limits.

Emergency conditions beyond the control of the licensee - An emergency operating condition exists if a short term variance from the flow or water level management requirements appears necessary to avoid personal injury, loss of life, or significant property damage. The emergency operating condition shall persist only so long as is necessary to abate the risk, and the amount of deviation from the license requirements shall be the minimum believed necessary to address the risk. If such conditions can be anticipated, the operational reaction should be included in any flow or water level management plan.

Lag time - Lag time is the time delay before downstream flows are reestablished after generation is suspended or reduced. The delay is caused by the time necessary for the headpond to rise and provide dam spillage and for the discharge to travel through the bypassed reach to the tailrace.

Ramping rate - Ramping rate is the staging of the flow transition over a time interval in order to artificially adjust river flows between two different discharge rates, such as between generation releases and a storage-period conservation flow. Ramping rates are commonly used to reduce mortality or disruption to aquatic organisms.

Reasonable access - Reasonable access to project lands is 1) access by the public for use of facilities provided in a project recreational plan during such hours and in such a manner as is consistent with the use for which the facilities are provided or as otherwise agreed upon; 2) access by the public for the use of water resources located at the project; and 3) access by governmental agencies charged with resource management or compliance monitoring, with the access for any of these uses restricted only where necessary to provide for public safety.

Run-of-river operations - A run-of-river operation is the operation of a hydroelectric facility without the use of reservoir storage. Such operations maintain flows below the tailrace equivalent to the total inflow to the project on an instantaneous basis. Normally, the headpond elevation is stable.

