

**Deerfield River Hydroelectric Project  
Water Quality Certification**

**Public Responsiveness Summary**

The Department of Environmental Conservation conducted a public hearing on October 17, 1994 at Whitingham High School in Whitingham for the purpose of receiving oral testimony or written statements and data bearing on the issuance of a water quality certification to the New England Power Company (NEPCo or the applicant) for the continued operation of the Deerfield River Hydroelectric Project located in the Deerfield River basin in the towns of Stratton, Somerset, Searsburg, Wilmington, Whitingham, and Readsboro. In addition to the hearing, written comments were accepted through the end of the business day on November 4, 1994; the Vermont Natural Resources Council (VNRC) asked for and received a filing extension through November 8, 1994. Public meetings were also held on December 5, 1994 and January 4, 1995 to discuss technical and legal issues relevant to this decision.

A total of 17 persons, representing themselves or organizations, presented oral and/or written testimony at the hearing or subsequently filed letters with the Agency. Written testimony was received from the applicant, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Windham Regional Commission, VNRC, Conservation Law Foundation, Appalachian Mountain Club, New England FLOW, Connecticut River Watershed Council Inc., American Rivers, American Whitewater Affiliation, and seven individuals.

Following is a summary response to the substantive comments received. The full text of these comments is available for inspection or copying at the Department's office of the Water Quality Division. A tape of the hearing is also available at the same location.

Several commenters simply stated their support for the Settlement Agreement and asked that the Department revise the certification to strictly follow the terms of the agreement. Most of these commenters did not state specifically where the draft certification significantly deviated from the agreement nor did they present an argument as to why the additional limitations contained in the certification were not required to assure maintenance of Vermont Water Quality Standards.

**1. WATER QUALITY STANDARDS**

a. Consistency of reservoir drawdowns with Standards

Comment: U.S. EPA commented that the Department of Fish and Wildlife's evaluation of the impact of reservoir drawdowns on habitat did not seem to support positive findings with respect to Standards Section 3-01(B)(5) *General Criteria: Aquatic Habitat* and the designated Class B value of high quality habitat for aquatic biota, fish and wildlife. EPA recommends that the Agency either acknowledge that substandard conditions will continue to exist and

complete a use attainability analysis to resolve this issue or provide substantiation that standards will be met.

☛ **Response:** Section 3-01(B)(5) requires that there be "[n]o change from background conditions that would have an undue adverse effect on the composition of the aquatic biota, the physical or chemical nature of the substrate or the species composition or propagation of fishes." Section 1-01(B) *Definitions* provides that, "[i]n determining undue adverse effect, the Secretary is authorized to make case specific judgements . . ." and shall consider "the water quality policy set forth in § 1-02, the classification of the waters and any other applicable provisions of these rules . . ." Section 1-02 *Water Quality Policy (10 V.S.A. § 1250)* sets forth a wide variety of potentially competing policies regarding the use of the State's waters, ranging from the policy of allowing "beneficial and environmentally sound development" to the policy of "upgrad[ing] the quality of waters." In view of the improvements and protections afforded to the aquatic biota in the reservoirs, including without limitation the creation of a quality salmon fishery, the Secretary has concluded that there is no undue adverse effect and that Section 3-01(B)(5) is satisfied. For substantially the same reasons, the Secretary has concluded that reservoir management will be compatible with the beneficial value of "high quality habitat for aquatic biota, fish and wildlife," which is set forth as a management objective in Section 3-03(A) *Class B Waters: Management Objectives*, particularly when read in light of Section 2-02(B) *Hydrology: Artificial Flow Conditions*, which requires that flows not be artificially controlled ". . . in a manner that would result in an undue adverse effect on any . . . beneficial value . . ."

**Comment:** VNRC comments that the Department has recognized reservoir fluctuations as impairing water quality (1994 Water Quality Assessment, 305(b) Report, Department of Environmental Conservation, July 1994, pp. 46-47) and that categorization as such requires the Department to condition the certification on stabilization of the reservoirs.

☛ **Response:** As discussed above, the Secretary has concluded that the Standards will be met in the reservoirs, as conditioned by the water quality certification. Therefore, stabilization beyond that required in the certification is not required.

**Comment:** VNRC comments that littoral zone impacts must be addressed in the certification of this activity.

☛ **Response:** The littoral zone benefits of reservoir stabilization is acknowledged. However, as discussed above, the Secretary has concluded that the Standards will be met.

**Comment:** Citing the water quality certification issued for the Lamoille River Hydroelectric Project (April 14, 1994), VNRC comments that consistency dictates that the Department limit drawdowns in order to provide for a functional littoral zone.

☛ **Response:** As noted in the discussion above, the determination of "undue adverse effect" under the Standards requires the making of "case specific judgements." The situation

presented in the referenced project differed from the Deerfield River Project in several important respects, including existing recreational uses of the reservoirs, aesthetics considerations, wetland values, magnitude of the proposed drawdowns, and operating characteristics.

**Comment:** VNRC comments that reservoir fluctuations as sanctioned in the draft certification would result in non-attainment of designated uses for Class B waters, including high quality habitat for aquatic biota, fish and wildlife; recreational uses such as angling; and aesthetics.

**Response:** As discussed above, the Secretary disagrees that the reservoir fluctuations allowed under the certification will result in non-attainment of designated uses for Class B waters.

**Comment:** VNRC comments that reservoir fluctuations as sanctioned in the draft certification would cause continued degradation of existing uses.

**Response:** The Department disagrees. On the contrary, existing uses will be enhanced by the provisions of the certification.

**Comment:** VNRC comments that the aquatic habitat criterion (Section 3-01(B)(5)) of the Standards will be violated by proposed reservoir drawdowns. VNRC considers "background conditions" as used in this criterion to be the river under pre-dam conditions, but that the changes caused by conversion to a reservoir are not at issue.

**Response:** The Department disagrees. As discussed above, in its view the reservoir drawdowns do not violate Section 3-01(B)(5).

**Comment:** VNRC comments that the artificial flow condition criterion (Section 2-02(B)) of the Standards will be violated by proposed reservoir drawdowns.

**Response:** The Department disagrees. As discussed above, in its view the reservoir drawdowns do not violate Section 2-02(B).

**Comment:** VNRC comments that the draft certification allows the continued draining of wetlands in non-compliance with the Vermont Wetland Rules.

**Response:** Several wetlands associated with Harriman and Somerset reservoirs would be considered protected Class II wetlands under the Vermont Wetland Rules. Technically, the rules only require a review when there is a proposal to change the hydrologic regime of a wetland associated with a fluctuating hydroelectric reservoir. Under Section 6.2(g), operation of existing hydroelectric projects is considered an allowed use not subject to review unless the flow of water into or out of the wetland is not altered or the wetland is to be drained, dredged, filled, or graded. When a change is proposed, a functional

evaluation of the impact on wetland values would be completed before the change is authorized, whether that change is to stabilize a reservoir or increase the extent of drawdowns. The project as proposed complies with the Wetland Rules.

b. Interpretation of dissolved oxygen criteria

Comment: NEPCo notes that the Department interprets the standard for cold water fish habitat to be both a concentration level of 6 mg/l and a saturation value of 70 percent and states Standards are met if either condition exists.

☛ Response: Both factors are physiologically important for the support of fish. A high oxygen concentration assures that adequate oxygen is available for respiration by aquatic organisms, both plants and animals, and high saturation levels provide partial pressures across the fish gills necessary for transfer of the oxygen to the blood stream. The Department, therefore, has interpreted the standard to require that both conditions exist.

c. Hydroelectric projects as an existing use

Comment: VNRC comments that the hydroelectric project should not be considered an existing use for protection under the anti-degradation provisions of the Standards.

☛ Response: The Department agrees. The Department must consider whether or not the activity proposed for certification, which is the Deerfield River Project in this case, would degrade any existing uses, whether or not those uses are designated uses. Candidate existing uses include commercial activities that depend directly on the preservation of an existing level of water quality (Section 1-03(B)(1)). The Standards specifically require that determinations of what constitutes an existing use shall be made by the Secretary on a case-by-case basis. The Agency does not consider hydropower projects, which generally tend to degrade water quality, as meriting protection as existing uses.

Use of the water body to receive or transport discharges of waste is explicitly not considered to be an existing use for the purposes of the anti-degradation policy. (Standards, Section 1-03(B)(1)(d)) Similarly, the Standards are not intended to consider hydropower facilities as an existing use.

Even if hydroelectric facilities were qualify as existing uses, state statute (10 V.S.A. § 1250) and the Standards (Section 1-03(A)) provide statements indicating that Vermont clearly intends to preferentially restore, protect and maintain beneficial uses and values in a manner consistent with the classification of the water:

The Secretary shall manage the waters of the State in accordance with the Water Quality Standards to protect, maintain, and improve water quality in such a manner that the beneficial values and uses associated with their classification are attained. All waters, except mixing zones, shall be managed so that, at a minimum, a level of water quality compatible

with all beneficial values and uses associated with the assigned classification are obtained and maintained. (Standards, Section 1-03(A))

d. Economics

Comment: VNRC comments that economics cannot be legally considered when making a determination under Section 401.

☛ Response: The Department agrees to the extent that economics cannot be considered such that it would result in the certification of an activity in order to assure its economic viability even though it fails to meet the criteria of the Standards. However, in this case, it is the Secretary's determination that Standards are met.

e. Application of Standards to Bypasses

Comment: VNRC takes issue with the application of the Agency flow procedure to hydroelectric project bypasses, arguing that the same standards apply to bypasses as downstream reaches and that use of the procedure constitutes a constructive amendment of the Standards.

☛ Response: Class B water quality standards apply to the bypasses associated with the Deerfield River Project. The Agency flow procedure is not designed to result in recommendations of minimum flows that violate the Standards or any other requirement of State law. As discussed above under the subject of economics, the determination of a minimum flow for a bypass can be made case specifically but must, at a minimum, meet applicable standards. Factors considered include the extent of habitat available in the bypass, recreational use of the bypass, aesthetics, and the contribution of oxygen-rich bypass flows to the downstream dissolved oxygen regime.

**2. PROCEDURAL ISSUE - REQUEST FOR A CONTESTED CASE PROCEEDING**

Comment: VNRC requested that this case be handled as a contested case proceeding under the Administrative Procedures Act (3 VSA, Section 809(a)).

☛ Response: The Department denies this request for the following reasons:

- 1) 3 V.S.A. §814(a) only applies when "the grant, denial, or renewal of a license is required to be preceded by notice and opportunity for hearing." The provisions for public hearings in the regulations applicable to 401 certificates give the Agency discretionary authority to hold hearings and thus does not come within the "required" language of §814.

2) The certification hearing held pursuant to Vermont Water Pollution Control Permit Regulations §13.3(i) is a public informational hearing where "any person shall be permitted to submit oral or written statements and data concerning the proposed permit." Its purpose is to give the public an opportunity to comment on the proposed permit. This is not a trial-like hearing conducted in a contested case proceeding where formal testimony is presented and cross-examination is allowed.

3) The Legislature clearly did not intend that the Agency conduct a contested case for the hundreds of permits it issues every year. It would be a practicable impossibility to do so with the resources allocated to the Agency.

4) Persons interested in 401 certificates issued by the Agency are not deprived of the due process provided by a contested case hearing. Appeals of 401 certificates are to the Water Resources Board which conducts a de novo hearing--a contested case with full due process rights.

### 3. FISHERIES MANAGEMENT

#### a. Resource conflict with management of Harriman Reservoir for lake trout

Comment: NEPCo comments that inclusion of lake trout in the Department of Fish and Wildlife's management plan for Harriman Reservoir may be unrealistic. The reasons put forward are 1) the stratification of the reservoir, with a relatively shallow epilimnion; 2) the limited forage base for support of large salmonids; and 3) the dewatering of spawning habitat during the winter drawdown. Regarding the loss of spawning habitat, NEPCo mentions that lake trout in Vermont lakes are generally managed as put-grow-and-take fisheries. NEPCo also states that management for lake trout is inconsistent with the Comprehensive River Plan for the Deerfield River Basin (Department of Environmental Conservation, November 1992) and the Settlement Agreement.

Response: In the past, the reservoir has supported trout that hold over from year to year. Although the effects of stratification and the dissolved oxygen regime on lake trout may bear further investigation, it is premature at this time to abandon lake trout management.

While the forage base may be affected by reservoir drawdowns, the new water level management to protect smelt spawning and limit biomass export should enhance forage populations.

Improved support of lake trout should also occur as a result of the Department of Fish and Wildlife's reduced stocking rates for salmonids, which should lower inter- and intraspecies competition for food and space. The planned initial stocking density for brown trout, lake trout, and salmon totals 4 fish/acre, or 6,860 fish, half of which are expected to be salmon

smolts produced in the Deerfield River. The remainder will be stocked brown trout and lake trout at a ratio of 2:1.

Since spawning habitat will likely be dewatered during the winter, lake trout management must be based on stocking of juveniles. *Vermont's Lake Trout Management Plan for Inland Waters* calls for encouraging natural reproduction where possible and for refining the stocking policy. Put-grow-and-take management for lake trout is commonly used in Vermont where natural reproduction is limited or lacking.

The water quality certification and put-grow-and-take management for lake trout is consistent with Goal 3.2 of the Comprehensive River Plan.

b. Design of formal assessment procedure to measure success of reintroduction of landlocked salmon to Harriman Reservoir

Comment: NEPCo requests joint development of the plan of study to assess the performance of the salmon program and the inclusion of the procedure in the certification.

Response: While the assessment procedure can and has been outlined, it is not possible to detail in advance all the decision points for what constitutes success. Possible avenues for achieving success depend in part upon the results of the data to be collected. The broad salmon production targets have been discussed in the certification. The fishery assessment will include stream electrofishing surveys and lake creel surveys. These studies will allow the Agency to determine if the salmon harvest goal is being met, and if it is not, whether the obstacle is the stream smolt production or lake survival.

The Agency will encourage NEPCo's participation in the development of the study plan and involvement in the assessment of the data.

#### 4. FLOW MANAGEMENT

a. Special flow requirements to support smelt spawning below Searsburg Station

Comment: NEPCo questions the need for providing a minimum flow of 175 cfs below Searsburg Station from April 20 through June 15 (ref. Condition B). NEPCo states that protection of river spawning would be adequately supported by providing the flows through May 15 because: 1) spawning activity normally ends by May 11; 2) other tributaries and Harriman Reservoir itself provide for spawning locations; and 3) the flow would not be hydrologically available that late in the spring. NEPCo also asks that the Department of Fish and Wildlife consult with NEPCo operations personnel each year regarding when the spawning and incubation period has ended; this would allow the special flows to be terminated earlier than May 15 in certain years.

☛ **Response:** A minimum flow of 175 cfs from April 20 through May 15 will provide a reasonable and acceptable level of protection for smelt spawning and incubation for the following reasons:

- 1) The Agency believes, based on past observations, that reservoir spawning is the primary contributor to the smelt population in Harriman Reservoir and that the Searsburg tailrace reach is much less important.
- 2) A significant portion of the river's spawning and incubation period is protected by providing the special flow of 175 cfs through May 15.
- 3) During the period from May 16 through June 15, a flow of 175 cfs is generally not sustained by natural flow conditions.
- 4) A flow of 55 cfs will protect most of the available habitat (about 80% of the area wetted under a flow of 175 cfs remains wet at 55 cfs)

The certification has been revised accordingly.

b. Ramping rates below Somerset Reservoir

**Comment:** For Somerset releases, the draft certification limits upramping to 100 cfs per day and downramping to 50 cfs per day. NEPCo indicates that the upramping limitation may cause a conflict with spillway operation under present license Article 28, which requires NEPCo to release full gate capacity of 850 cfs whenever the concrete crest is surcharged (elevation 2133.58 feet msl and higher). Regarding downramping, NEPCo is concerned that this limitation may result in increased failure rates for the Searsburg Dam flashboards.

☛ **Response:** *Upramping.* The upramping restriction of 100 cfs per day provides a reasonable rate of increase to respond to high runoff events. The Department has reviewed historic data from the U.S. Geological Survey Ayers Brook gage, which records flow from an unregulated watershed with approximately the same drainage area as Somerset Reservoir. The Somerset Reservoir gate capacity of 850 cfs is approximately equivalent to Ayers Brook's 1-day maximum high with a 25-year recurrence interval. Assuming a high inflow condition of 630 cfs (3-day high flow condition with a 200 year return interval), an initial reservoir release of 9 cfs, and an initial high reservoir elevation of 2131.6 feet msl (initiation of Condition II under reservoir highwater guidelines, see Footnote 1 of final certification), the reservoir would rise approximately 2.0 feet with the ramping rate set at 100 cfs. No surcharge would occur under that circumstance.

The three-foot flashboards provide a substantial storage buffer that further reduces the risk of spillage. Furthermore, the risk is even less during the late summer through winter, when the reservoir is maintained at lower elevations.

Although upramping does not seem to be an issue, NEPCo can change the highwater guidelines to provide for upramping to begin at a lower elevation than has historically been used.

For both upramping and downramping, the Department has added a notation in Condition B stating that the applicant may undertake studies to better define ramping needs.

☛ **Response:** *Downramping.* The flashboards at Searsburg are normally in place from May 1 to October 31 and, based on the information provided in NEPCo's December 9, 1994 comments, would potentially fail at flows around 1,800-2,000 cfs. The loon nesting requirement to stabilize Somerset through July 31 limits downramping during this period, as it would lead to a rising reservoir and potentially result in the flooding of the loon nests. Therefore, the period of concern for downramping rates is from August to October. Historic Somerset release records from 1980-1991, contained in NEPCo's response to AIR No. 8, show that the highest maximum daily discharge during the August-to-October period was 354 cfs. Without a downramping restriction, the maximum that NEPCo would have been able to reduce flows at Searsburg Dam would have been about 300 cfs, based on the historical data for this period. This reduction in flow would only represent 16% of the peak flow that causes failure of the flashboards. Control at Somerset would only potentially prevent failure if the gate is shut down at the correct time relative to the peak inflow hydrograph from the uncontrolled drainage; if the uncontrolled drainage does not produce 1800+ cfs alone; and if the initial release at Somerset is sufficiently high to allow the gate manipulation to make a difference at Searsburg. NEPCo has not provided any information showing the historic frequency of the use of the Somerset gates for this purpose nor has NEPCo supplied information on the present failure rate of the flashboards during the three months in question. Neither has NEPCo provided a technical analysis that demonstrates significant added risk of flashboard failure.

c. Flow proposal for Searsburg bypass

**Comment:** NEPCo comments that the Settlement Agreement provides for the maintenance of a minimum flow of 55 cfs in the Searsburg bypass through May 31 rather than through May 15 as provided for in Condition B (see Table B) of the certification.

☛ **Response:** The certification was drafted assuming that the draft Settlement Agreement was the proposal for licensing. The draft agreement did not provide for special fall/winter spawning and incubation flows. For consistency, the final certification has been revised to include the higher flow requirements for the second half of May.

**Comment:** VNRC recommends alternate minimum flow regimes and maximum flow releases below Somerset, Searsburg, and Harriman dams. (ref. pp. 33-34 of November 8, 1994 filing)

☛ **Response:** The minimum flows and other flow management controls contained in the certification were based on a thorough technical review and assure, in the Agency's opinion,

that Standards will be met. VNRC does not put forward a scientific argument to justify the alternate flows recommended.

## 5. FISH PASSAGE AT SEARSBURG DAM

Comment: NEPCo notes its concern regarding the economic impact of both providing downstream passage at Searsburg Dam and releasing flows into the Searsburg bypass to support spawning and incubation during the fall/winter period. NEPCo notes that Finding 218 contemplates a 7-year evaluation period before a decision is made on the need for downstream passage and asks that Condition I (now K), which was drafted to allow a request for passage as early as five years.

☛ Response: A seven-year period is necessary to determine program success and the need for stocking upstream of Searsburg Dam. The condition has been revised to reflect this.

Comment: NEPCo indicates that the draft certification's requirement to provide measures to prevent impingement and entrainment of fish at the Searsburg forebay is unnecessary because of the limited risk presented by the present design of the intake. NEPCo also states that such a request, measures to prevent impingement and entrainment separate from passage facilities for anadromous fish, is unprecedented in Vermont's Section 401 program.

☛ Response: The need to minimize impingement or entrainment is a site-specific decision that is not solely based on a requirement for downstream passage nor on whether there is an established precedent for such protection without passage in place. Impingement and entrainment issues are valid for all fish species that may move downstream, whether in a full migration behavior or in seasonal movement behavior.

The extent of the risk of impingement and entrainment presented by the present design of the Searsburg intake is unknown, but risk does exist. Based on information available, a trashrack with bar clear spacing of 1 1/2 inch is much less effective at preventing impingement and entrainment of small salmonids than is a clear spacing of 1 inch. A clear spacing of 1 1/4 inch, as found at the Searsburg facility, may provide an improvement over a clear spacing of 1 1/2 inch, but the extent of improvement has not been quantified.

Given the cost of altering the intake now to prevent entrainment and impingement and the fact that it would have to be redesigned for downstream passage, it is reasonable to defer a request for impingement/entrainment measures until a determination of the need for downstream passage for salmon is made. If, upon completion of the salmon assessment, it is determined that management for migratory salmonids will occur upstream, then downstream fish passage facilities will be requested and these facilities will also be designed to protect against the entry of brook trout into the project works.

If it is decided that management for migratory salmonids will not occur upstream of the dam, then one of two options is recommended to prevent the brook trout from entering the

project works. NEPCo could conduct a study to demonstrate if fish impingement and entrainment (with some corresponding mortality) is occurring and then install devices to minimize this effect if necessary. Alternatively, NEPCo could install devices to minimize entrainment. The flexibility on the type of devices is greater for the protection of brook trout than it would be for a strongly migratory fish like salmon.

## 6. RESERVOIR WATER LEVEL MANAGEMENT

### a. Feasibility of controlling Somerset Reservoir to support loon nesting

**Comment:** NEPCo asks that the Agency reconsider the requirement that NEPCo maintain Somerset Reservoir within a +/- 3 inch operating band during the loon nesting period. NEPCo is unsure of its ability to manage the reservoir to that tolerance and requests that it manage within a +/- 12 inch band until as late as the year 2000 when it will have attained the capability to manage within a +/- 6 inch band. The gates would be automated by 1998 and tested over a two-year period. NEPCo also notes the potential significance of wave action in causing variation in water levels at the nesting sites beyond NEPCo's control.

**Response:** The Department has added Condition D to require NEPCo to file a management plan for reservoir regulation the goal of which will be to maintain reservoir levels within the +/- 3 inch operating band and meet the other Somerset Reservoir management requirements of Condition B. As long as the reservoir is operated in accordance with the management plan, NEPCo will be considered to be managing water levels during Period 1 consistent with the requirements set forth in Condition B. If it is found that the operation in accordance with the plan does not attain the +/- 3 inch tolerance, the plan will be reevaluated to determine if changes can be made to maximize nesting success. The management plan shall reflect the schedule of gate automation; the testing procedures; analyses/studies related to water level variability during the nesting period; and the interim management strategy to be used until water levels will be managed using the automated gates.

**Comment:** NEPCo expresses concern over the certification's requirement to stabilize the reservoir by May 1 and the effect it may have on operational flexibility.

**Response:** The certification condition only requires stabilization of the reservoir by May 1 if the target elevation for nesting is attainable or if loons nest at a higher elevation. If the reservoir is low on May 1 and the loons have not nested, the certification does not require the reservoir level to be stabilized until the target elevation is reached or loons nest at a lower elevation. This is consistent with prior discussions between the Department of Fish and Wildlife and NEPCo.

**Comment:** Citing dam safety, NEPCo also expressed a concern over the certification's requirement to stabilize the reservoir at a higher elevation than two feet above the loon

target elevation of 2128.6 feet msl. (ref. meeting of December 5, 1994 and NEPCo letter of December 9, 1994)

**Response:** NEPCo has not provided sufficient evidence to demonstrate that the reservoir cannot safely be held stable if loons nest at elevations higher than 2130.6 feet msl. We believe that, given NEPCo's lengthy operating experience and the substantial capacity of the outlet, NEPCo should generally be able to prevent the reservoir from rising more than two or three feet above the nesting target elevation. Reference the discussion above concerning upramping rates. Given that the ramping requirement is suspended when necessary to protect a loon nest from flooding, NEPCo should be able to prevent the reservoir level from rising above a nest above elevation 2130.6 feet msl; it does not seem necessary to strand that nest in order to prevent the reservoir levels from possibly reaching the crest.

Further, based on NEPCo's comment letter of December 9, 1994, this issue may be somewhat moot as historic nesting habitat is flooded above elevation 2130.6 feet msl, and useable habitat may be limited.

Operation that results in the stranding of a nest may be considered a taking under Vermont's endangered species law. Available evidence does not reveal a conflict between stabilization at a higher level and dam safety.

**Comment:** NEPCo states that the record of loon nesting reflects the success of its past protection efforts. NEPCo also states that it expects that the additional controls it proposes will improve success.

**Response:** Loons were documented to have successfully nested (young survived through August) in 8 years during the 1978 through 1994 period (17 years). One chick fledged in 1994. The Agency agrees that the success rate can be expected to improve with more conducive water level management.

**b. Restriction on maximum winter drawdown of Somerset Reservoir**

**General Comment:** NEPCo requests that the maximum annual drawdown for Somerset Reservoir not be limited. NEPCo determines its maximum winter drawdown levels based on snowpack, anticipated spring runoff, and the precipitation expected during the runoff period, with goals of not spilling, complying with license Article 28 (see comments on ramping above), and minimizing the disruption to loons.

**Comment:** Design of the dam, with a spillway channel that can transfer water to toe of the dam, dictates that spillage risk be minimized.

**Response:** Major drawdowns will continue to be allowed by this action, minimizing the risk of spring spillage. Spillage is more likely at other times of the year, when the storage deficit is not as great. NEPCo and Department calculations of reservoir elevation based on

historic data from 1959-1992, taking into account the change in storage associated with the new minimum flow release, show that there were no occurrences in which the reservoir elevation exceeded the spillway crest with the allowance of a maximum drawdown to 2107 feet msl (NEPCo letter of December 9, 1994). In fact, the reservoir was at least three feet below the crest in each of the years from 1961 to 1973.

Improved watershed modeling and technological advancements like gate automation and telemetric rain gages can be employed to further improve reservoir management and reduce the risk of spillage.

Comment: NEPCo cites the water year 1984 as an example of the need for a greater winter drawdown, stating that it was necessary to perform emergency gate operations to meet the requirements of Article 28. Somerset was drawn to elevation 2105.6 feet msl that year and rose to 2131.5 feet msl in early June.

☛ Response: Information contained in the May 1993 response to Additional Information Request No. 8 does not support this argument. According to Table V, the reservoir releases were held at 4 cfs during most of April and May, and the highest spring gate release was 229 cfs, substantially less than the full capacity of 850 cfs. Elevation 2131.5 feet msl is fully two feet below the crest and just below the Condition II operating band of NEPCo's highwater guidelines. The situation seemed to have been well within control, and raising the maximum winter drawdown 1.4 feet to 2107 feet msl would not have caused the reservoir to reach the crest.

c. Restriction on maximum winter drawdown of Harriman Reservoir

General Comment: NEPCo requests that the maximum annual drawdown for Harriman Reservoir not be limited.<sup>1</sup> NEPCo determines its maximum winter drawdown levels based on snowpack, anticipated spring runoff, and the precipitation expected during the runoff period, with a goal of not spilling.

Comment: NEPCo states that additional upstream and downstream flooding may occur as a consequence of limiting the maximum drawdown.

☛ Response: The Department reviewed the effect of limiting the drawdown to elevation 1440 feet msl. As with Somerset Reservoir, the impact on spring high reservoir levels is somewhat offset by the fact that addition flows are released during the refill period because of the prescribed minimum flows. In the case of Harriman Reservoir, 70 cfs will be released into the bypass where no special releases have been provided previously. The 19-year record from 1974 to 1992 was analyzed. Under past management with no drawdown limit,

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<sup>1</sup>By letter dated December 9, 1994, NEPCo requested that the Department consider a maximum drawdown limitation of 1417.5 feet msl instead of the 1440 feet msl proposed in the draft certification.

the crest elevation was exceeded in 15 of the years, and elevation 1494.7 ft msl (3.0 feet of stoplogs) was exceeded in 5 years.<sup>2</sup> The Department's analysis indicates that the crest would have been surcharged in 6 of the years if a starting elevation of 1440 feet msl is used for each year, and in two of the years the level would have risen over three feet above the crest, assuming the stoplogs were in place.

NEPCo performed a similar analysis for the fourteen-year period 1960 to 1973 (NEPCo letter to the Agency, December 9, 1994). In 1969 and 1970 with a starting elevation of 1440 feet msl, the reservoir would have surcharged six-foot stoplogs. During those two years, the reservoir was actually drawn to 1421.5 feet msl and 1423.5 feet msl, and the reservoir, although high, did not exceed a level higher than six feet over the concrete crest, or within the height of the stoplogs; in 1969, the water rose 4.0 feet above the concrete crest, and in 1970, 5.4 feet.

If NEPCo wishes to minimize the number of occurrences of levels greater than the crest elevation of 1491.7 feet msl, improved modeling of watershed processes and data gathering could be used to refine management and more accurately forecast the need for increased outflow earlier in the season. Those early releases can be timed to coincide with periods where flows in Massachusetts are sufficiently low that the added discharge from Harriman Reservoir would not pose a flood threat. Given the magnitude of the allowed winter drawdown, peak spring flows can be expected to continue to be attenuated significantly relative to natural conditions.

With respect to Wilmington, the Department reviewed the federal flood hazard boundary maps for Wilmington. The reservoir high stages under discussion would run up the North Branch to approximately the confluence of Binney Brook and do not appear to present a hazard to improved property.

Comment: NEPCo states that limiting the maximum drawdown will increase the incidence of potential ice entrainment in the morning-glory spillway, compromising dam safety.

Response: The applicant has not demonstrated that ice entrainment is a significant problem associated with the reservoir drawdown limit at Harriman Reservoir. In its December 9, 1994 comments, NEPCo states that ice-out typically occurs between April 27 and May 1. Based on historic data, maximum reservoir elevations have occurred before May 1 only four times in the last 32 years. Therefore, ice-out typically occurs before the reservoir reaches its highest elevation.

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<sup>2</sup>The source of the data is NEPCo's response to AIR No. 22, Somerset and Harriman Aesthetics Documentation, October 1993, Figure 22-4, *Harriman Reservoir Midnight 10-Day Elevations*. Data was not presented in that reference to show in which of those years stoplogs were in place to prevent spillage. Also, higher levels may have actually occurred between the dates the 10-day readings were done, as was the case in 1976. NEPCo provided specific data for 1976 in a filing dated December 9, 1994; in 1976, the spring level reached 1496.9 feet msl.

NEPCo states in their comments of December 9, 1994 that Harriman is regulated to control the rate of rise, "with concern not to underfill the reservoir yet not have it rise to an elevation where ice could spill". If it appears that ice-out may be delayed and the forecasting model predicts high runoff rates, NEPCo has the option of increasing releases to control the rate of rise earlier in the spring period, thus avoiding ice spillage. This shifts the risk to one of underfilling, rather than one of ice spillage and dam safety.

In addition, the ability to control ice problems with structural solutions, such as an ice boom, have not been shown infeasible. NEPCo has cited incidences of having to handle ice at the outlet. If ice already poses a risk to the structure, NEPCo should be investigating solutions regardless of the issue of drawdown limitations. Another option may be to design the low-level outlet at the dam to pass discharges higher than the minimum flows when needed to control the rate of reservoir rise.

d. Source of maximum drawdown elevations used in the draft certification

Comment: NEPCo indicates that the Department selected maximum drawdown limitations based on water year 1980, which was used by NEPCo as an representative average year for the purposes of modeling project economics.

☛ Response: The low elevations in water year 1980 for Somerset Reservoir and Harriman Reservoir were 2108 feet msl and 1455 feet msl, respectively. The elevations used in the certification are 2107 feet msl and 1440 feet msl, respectively. These elevations differ, especially with respect to Harriman Reservoir. The elevations selected for the certification were based on a screening of historical data, with an objective of allowing management discretion to draw the reservoir to a greater extent than average conditions while retaining biomass in the reservoir. The winter 1980 low elevation for Somerset Reservoir is actually substantially lower than average conditions (2108 feet msl versus 2115 feet msl).

## 7. PROTECTION OF RARE AND ENDANGERED PLANTS

Comment: NEPCo questions the requirement of Condition G (now I) that NEPCo transplant the musk flower and Canada burnet, which are rare plants that are not protected under Vermont's endangered species law. NEPCo also states that it understands that a taking permit will be required for the endangered tubercled orchid. NEPCo states that it is of the opinion that Vermont is responsible for permitting and mitigation associated with the plants, given that the Agency is requiring the flows that are placing them at risk.

☛ Response: Although neither the musk flower nor the Canada burnet is legally protected under Vermont's endangered species statute, they are both rare in the state. The Agency did not request that NEPCo transplant the Canada burnet as it has a deep tap root and is not easily moved; however, this plant produces seeds that readily germinate. Mitigation would take the form of collecting the seeds and sowing them in favorable habitat along the new edge of bank rather than attempting to move mature individuals. As these two plants

are not protected under the endangered species law and are not presently candidates for listing, the mitigation requirement has been removed from the certification; however, the Agency continues to encourage NEPCo to include these two plants in the mitigation plan along with the orchid.

Regarding the orchid, an endangered species permit is not required, and the issues that would be addressed in that process have been considered in this action.

## **8. APPLICANT'S SPECIFIC COMMENTS ON FINDINGS**

The applicant commented individually on many of the specific findings. Following are responses for those substantive comments that have not already received an adequate response above. Where appropriate, findings have simply been changed to reflect the information provided by the applicant, and a response is not provided. The finding numbers referenced below are those used in the draft certification and may differ from those contained in the final draft.

### Finding 34

Comment: It states that the mean annual runoff of the USGS gage near Rowe, MA is 737 cfs or 2.90 csm. It also states "The amount of runoff generated in the upper Deerfield basin is higher than that recorded for any other major basin in Vermont." The applicant recognizes that the average annual precipitation is higher in the Vermont section of the basin versus the Massachusetts section. However, natural runoff volumes should not be tied to flows at the Rowe, MA gage. This gage reflects regulated flow conditions. The flow per square mile of unregulated rivers in Vermont was calculated as part of the Vermont Flow Policy negotiations. Here, over 42 USGS gaging stations that experience minimal, if any, regulation were analyzed. The resulting mean annual flow per square mile for all 42 gages was 1.77 csm, which is well below 2.90 csm. Although it is typically felt that river regulation does not effect average annual flows this is a function of the magnitude of the regulation. Because the river is regulated at Rowe, MA the mean annual flow is higher than would normally occur in unregulated watersheds. Because Fife Brook, located immediately upstream of the Rowe, MA gage is a peaking facility, higher discharges occur that influence the mean annual csm factor.

☛ Response: It is a fundamental concept that flow regulation cannot affect the long-term mean annual flow unless there is a trans-basin water transfer, changes to hydrologic variables like evapotranspiration, or flow is being measured in a bypassed reach. NEPCo's regulation of flows has markedly changed the annual hydrograph but has not resulted in a significant change in the total volume of runoff. The upper Deerfield River basin is comparatively water rich.

### Finding 68

**Comment:** It states: "The intake elevations are sufficiently low that there exists a potential for withdrawal of oxygen deficient water from the reservoirs and discharge of that water downstream into the river proper". The discharge of oxygen deficient water has not been shown in the data collected to date. At Somerset Reservoir, discharged water has remained well above Vermont dissolved oxygen standards. Likewise, based on the Class B water quality regulations, there have been no recorded violations of the dissolved oxygen standard below Harriman Station.

**Response:** The finding is correct as written. Both reservoirs stratify, and the intake elevations are such that oxygen deficient water is entrained by the intakes. At Somerset Reservoir, samples collected 300 feet downstream of the outlet have demonstrated that reaeration at the free discharge point and in the outlet channel prevents a dissolved oxygen problem downstream. At Harriman, the condition that will exist at the bypass minimum flow discharge and at the tailrace have not been sufficiently defined, necessitating the certification condition related to further study at these two discharge points.

### Finding 72

**Comment:** It is noted that during August 5, 1991, a D.O. and temperature profile of Somerset Reservoir was collected near the intake. It is also noted that the D.O. profile inexplicably increased from 4.7 mg/l to 6.3 mg/l from 16 to 25 m, respectively. In other reservoir sampling studies this same phenomenon was observed. During August 5, 1982, the Vermont Department of Environmental Conservation also collected a D.O. profile that showed a similar trend. The D.O. changed from roughly 3.7 mg/l to 5.3 mg/l in less than 6 feet. The August 5, 1982 sample was collected further upstream of the intake. Both surveys yielded the same observation in terms of the D.O. concentration decreasing and then suddenly increasing over a minimal change in depth. One theory regarding this phenomenon is algae settlement.

**Response:** Although this atypical dissolved oxygen profile appears to have occurred twice during sampling on Somerset Reservoir, whether it was caused by sampling errors or a physical phenomenon cannot be determined from the existing data set. Further investigation and an attempt to define the cause is not warranted.

### Finding 91

**Comment:** It states "The Appalachian Mountain Club (AMC) had recommended using a higher estimate of the August median flow of 0.39 csm". In determining the 0.39 csm value the AMC used the following periods of record: (North River, 1967-1991; South River, 1967-90; and Green River, 1968-91). The AMC excluded from

the North River analysis the available data from the 1940-1966 period of record. By excluding the available data from a long(er) period, NEPCo believes that the full range of hydrologic events was not accurately portrayed. The August median flow for the period from 1940-1991 is substantially lower than the figure calculated from the 1967-1991 period. Calculations of median events should be based on the longest period of record available, not simply a recommended minimum of [25] years. It should also be noted that at the time the applicant completed its Aquatic Base Flow (ABF) analysis, the available hydrologic database ended in 1984. The AMC conducted their analysis a few years later with additional flow data available.

☛ **Response:** The Department has limited confidence in the parametric analysis used by both NEPCo and the AMC and, as stated in the certification, prefers basing estimates of a stream's hydrologic statistics on at least some gaging specific to the stream. No flow measurements specific to the upper Deerfield River basin were used in estimating the summer and winter flow statistics used by the applicant. Given that the minimum flows contained in the certification are based on special habitat studies rather than hydrologic standards, it is less important to develop refined estimates for the August and January median flows.

## Finding 92

**Comment:** Three items need to be addressed here as follows: 1) it states that there is a difference in annual precipitation between the upper basin (within Vermont) and the lower basin (within Massachusetts) of 6 inches, 2) it states that the total annual runoff recorded at the Rowe, MA gaging station is about one third higher than the total annual runoffs recorded at the three tributary gages, and 3) it addresses the AMC's ABF analysis. Item 1) In the License Application (Volume XVII, NEPCo Responses to Agency Correspondence, NEPCo Responses, Page 64-65) NEPCo discusses the difference in precipitation between the upper and lower basins. In short, the average August precipitation for the upper and lower basin is 4.4 inches and 4.0 inches, respectively; a 10 percent difference. Assuming that all of this precipitation was converted to runoff, the applicant's 0.31 csm ABF ratio would increase by 10 percent to 0.34 csm. Item 2) see comments on Finding 34 regarding the difference between annual total runoffs at the Rowe, MA USGS gaging station and the three unregulated tributaries. In short, because the Rowe, MA gage reflects regulated flow conditions, csm ratios cannot and should not be compared to the three unregulated tributaries. Item 3) see comments on Finding 91.

☛ **Response:** Items 2 and 3 have already been discussed above. Regarding the first item, runoff for a given calendar month is not generated solely by precipitation in that month. Groundwater contributions can also be significant, and, given the overall higher annual precipitation in the upper portion of the basin, it is reasonable to assume that the river's unitized base flow is also somewhat higher in August as a result. The six-inch annual difference is a +13% difference relative to the lower

basin and not much different than the +10% calculation NEPCo puts forward; however, the Department has not attempted to reestimate the August median flow based on a comparative analysis.

### Finding 95

**Comment:** In addition to the IFIM studies that were conducted to establish minimum flow regimes, NEPCo also conducted other studies including demonstration flows and Aquatic Base Flow studies.

**Response:** The finding mentions IFIM as one of the site-specific evaluations of the functional relationship between flow and fisheries habitat. It is correct that demonstration flow observations were also used, and those studies are discussed in the certification. The Aquatic Base Flow study was not accepted by the Agency, but is also discussed in the certification.

### Finding 131

**Comment:** Under Table 7, it states: "Overall, a flow of 30 cfs does not provide acceptable habitat conditions". Other than this blanket statement, there is no rationale to explain why habitat conditions are not acceptable at 30 cfs.

**Response:** A flow of 30 cfs in both the upper and lower sections of the Harriman bypass does not provide a reasonably full channel nor the diversity of habitat for all life stages of target organisms. Habitat is limited for adult trout species, and only a small amount of spawning habitat (approximately half of all suitable sites<sup>3</sup>) is available at 30 cfs. Observations made of the bypass at a flow of 30 cfs indicate that in general the velocity seemed low and side channels were dry or had water but no current. The water surface appeared very slack, lacking sufficient turbulence, thereby limiting the amount of instream overhead cover available.

Additionally, the upper bypass had study sites that appeared to be too shallow overall, thus there was little adult habitat. There is a significant increase in wetted width in the upper section of the bypass between 30 cfs and 57 cfs (9.5 feet) and 30 cfs and 90 cfs (20.5 feet)<sup>4</sup>. A flow of 30 cfs does not provide enough diversity or quantity of habitat for all life stages of the target organisms.

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<sup>3</sup>Memorandum from Roderick Wentworth, Department of Fish and Wildlife, to Jeffrey Cueto, Department of Environmental Conservation, June 27, 1994

<sup>4</sup> *ibid.*

### Finding 132

**Comment:** It states: "As with the upper section, a flow of 30 cfs does not provide acceptable habitat conditions". Again, there is no rationale to explain why the habitat conditions at 30 cfs are not acceptable.

☛ **Response:** See the response to Finding 131 above.

### Findings 144 and 146

**Comment:** It states, under both paragraphs, that an organism's habitat is controlled by whichever flow (minimum or generation) provides the smaller amount of habitat. It should be noted that natural flow conditions also control the amount of habitat.

☛ **Response:** The findings were written in the context of a highly regulated river. The findings have been revised for clarity on this issue.

### Finding 157

**Comment:** In Finding 156 it states that the wetland plant communities around the Somerset and Harriman shorelines were found to be limited in extent due to non-nutritive soils, sand and gravelly substrates, steeply sloping shorelines, wind and water effects, and water level fluctuations. However, in Finding 157 it states that "The extensive drawdowns at Somerset and Harriman reservoirs prevent the establishment of beneficial wetland plant communities that would otherwise become established along the shoreline margins and in the shallow areas of the reservoirs". This statement is inconsistent with that stated in Finding 156. There are other reasons why wetland communities cannot be established along the Somerset and Harriman shorelines besides water level fluctuations. The non-nutritive soils, steeply sloping shorelines, and rocky substrate are the most important factors that inhibit significant wetland development along the shorelines of Somerset and Harriman reservoirs. The parent material of the soils that compose the substrate of Somerset and Harriman reservoirs is glacial till. Glacial till has little, if any, organic nutrients that could be used to support a prominent and diverse wetlands area. Presently, the only wetlands of any significance at Somerset and Harriman reservoirs, in terms of size, are located near the mouths of major tributaries. These wetlands communities have developed in the alluvial soils and rich organic muds that have been entrained and deposited by the tributaries. Also, the steep shorelines and rocky substrate do not provide a conducive environment for the development of emergent wetland vegetation. Without water level fluctuations, some wetland habitat could be expected to be developed. Although, the new wetland communities would not be substantial in terms of size and biodiversity. These wetland communities could be expected to inhabit only a very narrow strip along selected areas of the reservoir shorelines. Stabilizing the reservoir levels would not ensure that wetland communities could be

developed any more significantly than in the present scenario. Even with reservoir drawdowns limited, the natural reservoir fluctuation could be expected to be as much as two to three feet. This would subject the existing wetland vegetation to drought conditions. In short, there is no guarantee that even with stable water levels, a wetland community could develop.

☛ **Response:** The extent of potential wetland establishment through reservoir stabilization has not been extensively investigated. Even narrow fringe wetlands are valuable for several functions, including shoreline stabilization, cover for wildlife, and food chain support. The natural variations in water levels that follow an annual cycle of two or three feet would not necessarily inhibit the establishment of wetlands. Many wetlands are subject to annual water level variations on that order.

### Finding 159

**Comment:** It states that a rise or fall of the reservoir's water level can severely impact the reproductive and nesting success of the loon. It also states that the two most common causes of nest failure is nest flooding and predation. In a memo from Eric Chapman, VINS, to John Ragonese, NEPCo, it describes flooding as the more acute problem. Mr. Chapman describes a fluctuation range beyond 3 inches could cause nesting to fail. The memo states that a fluctuation of six or seven inches caused the nesting loons to have to drag themselves 12 feet. NEPCo understands the benefit to limiting the amount of fluctuation and the insurance it provides to the hatching success, yet in both 1993 and 1994, with fluctuations beyond 3 inches, loon eggs successfully hatched.

☛ **Response:** As stated in the finding, fluctuations in pond levels commonly cause nesting failure. Given that many of the ponds used in Vermont are hydroelectric reservoirs, this is not surprising. The 1994 Somerset loon nest referenced in the comment was compromised by a water level drop of 6 or 7 inches, as mentioned in draft Finding 163. The drop caused the adults to drag themselves 12 feet between the nest and the water. Lack of predation to exposed nest and determined loon adults caused the nest to succeed in spite of the risks presented by the lowered water level.

### Finding 164

**Comment:** It states that an elevation of 2128.58 feet msl is considered a reasonable target elevation to achieve by May 1 in order to support loon nesting. In the memo dated September 14, 1994 from Steve Parren, VDFW, to Rod Wentworth, VDFW, reaching the 2128.58 msl target elevation is a goal and may be unattainable but water levels should be brought to the May 1 level as soon as possible. It is further stated in the memo that if this elevation is unattainable, the level should be stabilized at the June 1st elevation.

☛ **Response:** References made to the September 14, 1994 memo are incomplete and potentially misleading. The memo states the following.

"If by 1 June the 2138-foot [2128.58 feet msl datum] elevation is not reached, NEPCo shall stabilize water at the **highest elevation below 2138 feet that is attainable** within plus or minus 3 inches. If loons are known to be nesting at a different location, then NEPCo should stabilize water fluctuations within plus or minus 3 inches of the water level associated with the new nesting location."

The emphasis added above means that if loons are not yet nesting, water level should be stabilized below the target elevation that was not reached. The second line of the quote indicates that a loon nest location is associated with a water level elevation and this elevation should supersede the 2128.58 msl target whether it is above or below the target. The top of Page 68 of the September 16, 1994 certification draft gives an example of stabilization above the target elevation.

#### Finding 172 and 252

**Comment:** Review of the Rare, Threatened or 'Endangered Plant Species of the Deerfield River report (License Application, Volume XIII, Appendix E7, Page 2) indicates that there are observations of the tubercled orchid in the Searsburg bypass. NEPCo requests that the state provide whatever record they have of this plant in the Searsburg bypass.

☛ **Response:** A map developed by the Agency of Transportation consultant has been forwarded under separate cover.

#### Finding 201

**Comment:** NEPCo has reviewed the publication cited. Many of the values sought in the public warning draft reflect reservoir/lake ecosystem considerations or guaranteed minimum flow requirements which would not be possible without a hydropower (or other water management) system in place on the Deerfield River. NEPCo's view of the publication is that it is a non-technical public policy reflection seeking to "naturalize" regulated streams and ". . . to stabilize impoundment water levels to protect reservoir fisheries resources . . ." without bothering to address the fundamental irony that there would be no "reservoir" or "reservoir fishery resource" without the regulation of the hydropower facility.

☛ **Response:** The Department has recognized the value of the reservoirs for the special recreational and social values they offer, and the study report cited certainly made no recommendations to fully restore the lost riverine resources, but only suggested a course of mitigation which is now being followed in acting on this

certification. For clarification, the Department does not view the flow regime, as proposed with guaranteed flows, as an enhancement over natural flow conditions.

#### Finding 235

Comment: It states that flows naturally drop below the August median flow. It should be noted that, by guaranteeing Somerset's minimum flow from storage, it represents an enhancement over natural hydrologic conditions.

☛ Response: The guaranteed minimum flows during summer low flow conditions are an enhancement for that period. The finding has been revised as recommended.

#### Finding 244

Comment: We are unsure if this paragraph is applicable to the Deerfield River Project.

☛ Response: The finding has been deleted.

#### Finding 253

Comment: The applicant has stated in its Additional Information Request No. 4 that minimum flows in the Harriman bypass should be increased slowly over time such that the tubercled orchid migrates naturally.

☛ Response: The suggestion for gradually increasing the minimum flows beginning in the spring (mid to late May) was intended to minimize the mortality to orchid individuals. Since the orchids produce new roots annually around late May to early June, the Agency expects that the greatest potential for success will occur if the transition to the new minimum flow regime is made before root growth begins. The schedule contained in the certification condition has been changed to reflect this.

### **9. APPLICANT'S SPECIFIC COMMENTS ON CONDITIONS**

The applicant commented on several of the draft conditions. Following are responses where appropriate and not covered above. The letter references for specific conditions are those used in the draft certification and may differ from those contained in the final draft.

#### Condition A

Comment: NEPCo asks that the condition not be worded to specifically require operation and maintenance consistent with the findings of fact and conclusions in the certification.

☛ **Response:** This is a standard condition for Vermont certifications. NEPCo does not explain the basis for the requested change.

### Condition B

**Comment:** NEPCo indicates that "or inflow, whichever is less" should be added after the two flows cited in Table B.

☛ **Response:** The introductory paragraph states that all flows requirements are the numeric value or "instantaneous inflow, if less."

### Conditions B and C

**Comment:** NEPCo asks that the 90-day filing requirements be increased to one year.

☛ **Response:** The Department has revised the filing deadlines under several of the conditions to provide what it believes are reasonable timeframes for developing the filing information. The Department would like NEPCo to file information well in advance of these deadlines where practicable.

### Condition E

**Comment:** NEPCo asks that the water quality reports be filed no later than February 1 following the sampling year instead of by the end of the year.

☛ **Response:** The sampling year ends with October. As the reports are only compilations of sampling data, NEPCo should be able to file by the end of December.

**Comment:** NEPCo asks that sampling at Harriman dam be deferred until "completion of the bypass works" instead of June 1996 as drafted.

☛ **Response:** The condition has been redrafted.

### Condition Q

**Comment:** NEPCo asks that the telephone notification systems for Searsburg and Harriman dams be operational upon the commencement of passage of minimum flows rather than by May 1, 1996 as drafted.

☛ **Response:** The condition has been redrafted as recommended.

### Requested additional condition

Comment: NEPCo has requested being given the discretion of operating the project differently than prescribed in the conditions of the certification if an emergency exists. NEPCo asked that the following condition be added:

Emergency conditions beyond the control of NEPCo including, but not limited to, anticipation of or occurrence of high natural precipitation, or other natural conditions leading to extreme runoff events; flood storage requirements; ice conditions; equipment failure; or electrical emergencies in which the operational restrictions set out herein will or are reasonably likely to result in interruption of service to electrical customers; may occasionally require NEPCo to make variations from the operational restrictions set out herein when compliance would be impossible, or inconsistent with the prudent and safe operation of the Project. The applicant will provide notice of such variation to U.S. Fish and Wildlife Service, and the Vermont Agency of Natural Resources, within one business day of the applicant's knowledge of such an event.

Response: The Department does not include broad-based waivers in certifications. NEPCo has not discussed specific power and non-power emergencies that may occur, including their frequency, and what extraordinary operating responses may be necessary. Without specific information, the Department cannot assess the impact of the deviations from the conditions of the certification as drafted and the implications for management of the resource under the Standards.