



STATE OF NEW HAMPSHIRE
DEPARTMENT of RESOURCES and ECONOMIC DEVELOPMENT
DIVISION of FORESTS and LANDS
172 Pembroke Road P.O. Box 1856 Concord, New Hampshire 03302-1856

27 February 2013

603-271-2214
FAX: 603-271-6488

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, DC 20426

RE: Comments on October 2012 Pre-Application Documents (PADs) and December 2012 Scoping Document 1 (SD1)
Wilder Hydroelectric Project (Project No. 1892-026)
Bellows Falls Hydroelectric Project (Project No. 1855-045)
Vernon Hydroelectric Project (Project No. 1904-073)
TransCanada Hydro Northeast, Inc.

Dear Secretary Bose:

The New Hampshire Natural Heritage Bureau (NHB), in the NH Department of Resources and Economic Development (DRED), is pleased to provide the following comments on the October 2012 Pre-Application Documents (PADs) prepared by TransCanada Hydro Northeast, Inc. for three dam relicensing projects on the Connecticut River: Wilder Hydroelectric Project (Project No. 1892-026), Bellows Falls Hydroelectric Project (Project No. 1855-045), and Vernon Hydroelectric Project (Project No. 1904-073).

NHB Comments on PADs

1. Section 3.8.3 (Wilder, Bellows Falls, and Vernon PADs). Although the PADs describe the types of wetlands that occur in the project areas they do not address how project operations could affect wetland extent, type, and composition. NHB is submitting a study request (based on a similar request from Vermont) to assess potential wetland impacts (Appendix A).
2. Section 3.8.3 (Wilder, Bellows Falls, and Vernon PADs). The PADs state that floodplain forests are generally above the influence of daily water level fluctuations. However, project operations will have some effects on these important natural communities, including affecting the extent of nearby sources for invasive plant propagules. NHB is submitting a study request to assess project impacts to floodplain forests, particularly invasive plant abundance (Appendix B).



3. Section 3.9 (Wilder PAD). The RTE Project Area for rare, threatened, and endangered species (defined on pg. 3-106) does not include areas affected by dam releases downstream of Wilder Dam. NHB requests that the RTE Project Area be extended downstream from the dam to the next impoundment area, since fluctuations in water level due to project operation do occur in this area (which includes the three known populations of the federally listed Jesup's milk-vetch plant).
4. Section 3.9.4 (Wilder, Bellows Falls, and Vernon PADs). NHB acknowledges and appreciates the preliminary (2012) studies that TransCanada conducted to assess impacts to RTE plants and the federally listed Jesup's milk-vetch. However, drafts of the reports were not received by NHB until 25 February, 2013, too close to the March 1 deadline for PAD comments to allow review by NHB and other concerned agencies. We are therefore re-submitting the study requests at this time (Appendices C and D); requests that will be withdrawn if the studies done to date accomplish the requested objectives.
5. Section 3.9.4 (Wilder, Bellows Falls, and Vernon PADs). The PADs for all three projects state that "Many rare plant species populations have apparently adapted, tolerate, or rely on the existing flow regime with the particular zone they occur in" (e.g. Wilder PAD, pg. 3-112). This is a flawed statement. A more accurate description is in Section 3.7.4 of all three PADs, e.g. (for Wilder): "The average daily water level fluctuation of 2.5 vertical feet has resulted in a zone of sparse vegetation along most of the shorelines of the impoundment. Wetland- or water-dependent wildlife and plant species will most likely be adversely affected by the daily wetting and drying cycles along the river's edge."
6. Section 3.9.5 (Wilder, Bellows Falls, and Vernon PADs). The PADs for all three projects state that "Because no changes are proposed to project operations, no new effects on rare state, or federal terrestrial plant species or communities resources are anticipated" (e.g. Wilder PAD, pg. 3-113). However, NHB is concerned about ongoing effects to RTE species and exemplary natural communities.

NHB Comments on SD1

1. Section 4.2.5 (Threatened and Endangered Species) refers only to species listed under the federal Endangered Species Act (ESA). NHB requests that FERC takes into account impacts to state-listed plant species and exemplary natural communities per NH RSA 217-A, which identifies these elements as a priority for conservation in the state (e.g. 217-A:7 "To the extent possible actions funded or carried out by state agencies shall not jeopardize the continued existence of any protected plant species or exemplary natural community")

Thank you for the opportunity to comment. If you have any questions, please contact me at (603) 271-2214 (Sabrina.Stanwood@dred.state.nh.us).

Sincerely,



Sabrina Stanwood
Administrator, Natural Heritage Bureau
Division of Forests & Lands - DRED

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cc: Susi von Oettingen, USFWS
Bob Popp, VT Natural Heritage Inventory
John Ragonese, TransCanada

Appendix A

Study Request: Impacts of Water Level Fluctuation in Project Impoundments on Wetlands (Project Nos. 1892, 1855, and 1904)

Goals and Objectives

The goal of this study is to determine the impacts to wetlands from daily and seasonal water level fluctuation in the impoundments from the Wilder, Bellows Falls, and Vernon Hydroelectric Project operations.

The objectives of this study are to identify all wetlands types within the project boundaries and impoundments, and determine the proportion of wetlands and wetland type (i.e. emergent, shrub, forested) that are impacted by daily and seasonal water level fluctuations from project operations. Ratios of wetland types in the project area should be compared to previous national wetland inventory maps, and/or to reference conditions to determine if wetland types within the project impoundment are being altered by project operations. The objectives are also to determine how project operations are affecting the wetland plant community composition, including promoting the spread of invasive species or affecting rare, threaten, and endangered species.

Resource Management Goals

RSA 217: A (The Native Plant Protection Act) outlines specifically that the NH Natural Heritage Bureau (NHB) engage in investigation and research. 217-A: 4 “The department shall conduct investigations on all species of plants and natural communities indigenous to and throughout this state necessary to develop information relating to population, distribution, habitat needs, limiting factors, and other biological and ecological data, and to determine protective measures and requirements necessary for their survival.”

RSA 482- Outlines the mission of the NH Department of Environmental Services Wetlands Bureau to protect and preserve submerged lands under tidal and freshwaters and its wetlands (both salt water and fresh-water) from unregulated alteration that would adversely affect the natural ability of wetlands to absorb flood waters, treat storm water and recharge groundwater supplies, impact fish and wildlife of significant value and depreciate or obstruct the commerce, recreation and the aesthetic enjoyment of the public.

Public Interest

Not applicable.

Existing Information

The PAD does not address how wetlands type or wetland community composition could be impacted by daily and seasonal water level fluctuations within the impoundment.

Project Nexus

The projects (FERC No. 1892, 1855, and 1904) currently operates in a peaking mode, with allowable impoundment fluctuations of up to 8 feet, with proposals to continue as such. Wetlands can be affected by the operations of the hydropower project depending on frequency, timing, amplitude and duration of impoundment fluctuations. The PAD provides limited information on how project operations affect wetlands and the plant community composition within the project impoundment. Operations of the project should conform to New Hampshire Department of Environmental Services’ goal of protecting significant wetlands and their values and functions, while ensuring that there is no net loss of such wetlands. The Natural Heritage Bureau requests a study to determine the impact by normal daily and seasonal operations of the project on wetland communities.

Proposed Methodology

The widely accepted methodology in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, and supplemental guidance documents issued by the U.S. Army Corps of Engineers is recommended for identifying wetlands. The general community composition should be recorded as well as any rare, threaten or endangered plant species or invasive species. The proportion of wetlands that are impacted by project operations should be compared to reference wetlands communities to evaluate how plant species composition has been altered by project operations. The frequency, timing, amplitude, and duration of reservoir fluctuations on impacted wetlands should be recorded throughout the year. The ratio of wetland types presently identified in the project boundaries should be compared to national wetland inventory maps to address whether project operations have altered wetlands.

We also propose that data collection include the use of the NHB's Level 2 Ecological Integrity Assessment method (EIA). Characteristics of the NHB EIA include:

- Reliance on a general conceptual model that:
 - Identifies the major ecological attributes – landscape context, size, and the condition of vegetation, soils, and hydrology.
 - Provides a narrative description of declining integrity levels based on changes to ecological attributes.
 - Uses a metrics-based approach to assess the levels of integrity.
- Use of ecological classifications at multiple scales to guide the development of the conceptual models, thereby enhancing attribute assessment.
- A Level 1 remote sensing approach for assessing landscape context using GIS prior to a site visit.
- Ecosystem stressors measured to inform evaluation of condition metrics.
- Ratings and thresholds for each metric based on “normal” or “natural range of variation” benchmarks.
- A scorecard matrix for rating and integrating metrics into an overall set of indices of ecological integrity.

Level of Effort and Cost

The cost and effort of this study will be moderate, but is important to document the potential impact operations have on wetlands within the vicinity of the project to determine if New Hampshire's wetland management goals are being met.

Appendix B

Study Request: Establishment of Permanent Plots to Assess the Impacts of Ongoing Operations on Floodplain Forest Communities (Project Nos. 1892, 1855, and 1904)

Goals and Objectives

The goal of this study is to determine the ongoing impacts to floodplain forests along the Connecticut River from daily and seasonal water level fluctuations associated with hydroelectric project operations. Natural flood regimes help create and maintain floodplain forest communities. Hydroelectric operations alter natural flood regimes and daily flow. The establishment of permanent plots is the best method to capture long term trends and changes associated with ongoing operations.

The objective of this study is to establish permanent plots in floodplain forest communities to monitor long-term changes and trends in species composition and community structure. Data collected during the establishment of these permanent plots will serve as baseline for future data comparisons. Invasive species are a particular threat to floodplain forests, as these species thrive on disturbance, and affect native species composition including potential impacts to rare, threaten, and endangered species.

Resource Management Goals

RSA 217: A (The Native Plant Protection Act) outlines specifically that the NH Natural Heritage Bureau (NHB) engage in investigation and research. 217-A: 4 “The department shall conduct investigations on all species of plants and natural communities indigenous to and throughout this state necessary to develop information relating to population, distribution, habitat needs, limiting factors, and other biological and ecological data, and to determine protective measures and requirements necessary for their survival.”

Public Interest

The general public has a growing interest in the spread and control of invasive species.

Existing Information

A 1998 Natural Heritage report, “Floodplain Forest Natural Communities Along Major Rivers in New Hampshire” (Bechtel and Sperduto 1998) inventoried and classified floodplain forest communities and includes some data on the Connecticut River floodplain forests. This report, along with known locations of exemplary floodplain forests in the NHB database can serve as background information for the proposed study plan.

Project Nexus

The PAD currently dismisses concerns for floodplain forests stating that they are situated at higher elevations that would not be impacted by daily operations. However, it is hard to ignore the fact that operations have altered natural flood regimes. Floodplain forests can be affected by the operations of the hydropower project depending on frequency, timing, amplitude and duration of impoundment fluctuations and as well as downstream fluctuations. The PAD provides limited information on how ongoing project operations affect floodplain forest communities.

Proposed Methodology

Establishment of permanent plots within floodplain forests communities should be 20m x 20m and follow standard NHB methodology for data collection. We also propose that data collection include the use of the NHB's Level 2 Ecological Integrity Assessment method (EIA).

Standard NHB data collection includes:

- Natural community system type (Sperduto 2011)
- Natural community type (Sperduto and Nichols 2011)
- Identification of all native and non-native plant species
- Percent coverage estimates for all plant species
- Other descriptive notes including information on soils and other physical site characteristics, evidence of human disturbance, size of the community, and evidence of wildlife
- Diagnostic natural community and rare species photographs.

Characteristics of the NHB EIA include:

- Reliance on a general conceptual model that:
 - Identifies the major ecological attributes – landscape context, size, and the condition of vegetation, soils, and hydrology.
 - Provides a narrative description of declining integrity levels based on changes to ecological attributes.
 - Uses a metrics-based approach to assess the levels of integrity.
- Use of ecological classifications at multiple scales to guide the development of the conceptual models, thereby enhancing attribute assessment.
- A Level 1 remote sensing approach for assessing landscape context using GIS prior to a site visit.
- Ecosystem stressors measured to inform evaluation of condition metrics.
- Ratings and thresholds for each metric based on “normal” or “natural range of variation” benchmarks.
- A scorecard matrix for rating and integrating metrics into an overall set of indices of ecological integrity.

Level of Effort and Cost

The cost and effort of this study will be low to moderate because this particular study request only includes the establishment of permanent plots and one year's worth of baseline data.

Appendix C

Study Request: River Levels Relative to Jesup's Milk-Vetch Populations (Project No. 1892)

Goals and Objectives

The goal of the study is to assess the extent to which fluctuations in river level affect Jesup's milk-vetch (*Astragalus robbinsii* var. *jesupii*), a plant federally listed as Endangered. The only three known populations occur on rock outcrops at the edge of the Connecticut River below Wilder Dam. Part of the Recovery Plan for the taxon is the establishment of additional populations to reduce the risk of extinction due to stochastic events. One experimental population has been established along the same stretch of river.

The primary objective of the study is to determine the water levels (cfs at the West Lebanon gage) at which Jesup's milk-vetch (JMV) populations are partially or fully covered by water, at all three populations and one introduction site. To accomplish this, objectives include: determining the elevation of existing benchmarks (bolts drilled into the bedrock); establishing additional benchmarks where necessary, e.g. at the introduction site; and developing equations for predicting flow levels that would result in inundation of the plants.

Resource Management Goals

The Endangered Species Act requires federal agencies, in consultation with the U.S. Fish and Wildlife Service to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. Therefore one goal of the FERC relicensing process should be that project operations do not jeopardize JMV populations.

Public Interest Considerations

Not applicable.

Existing Information

All three JMV sites have been studied since the early 1990s, so extensive data are available on plant numbers and approximate locations within sites. However, the lowest water level that affects the plants is unknown. In 1998, permanent bolts were drilled into bedrock at all three sites at two elevations relative to an arbitrary reference point. Annual censuses since then have documented plant numbers relative to the permanent bolts. However, the elevation of the bolts relative to water levels at specific cfs values is unknown.

Project Nexus

High-water events are known to affect the JMV plants and their habitat through soil deposition, direct removal of plants in summer floods, and ice scour (all the plants grow below the woody vegetation line on rock outcrops). The range of river level fluctuations associated with daily project operations is unlikely to affect many existing plants, since most seem to grow slightly above typical release levels. However, releases at certain times of the year, including periodic high flows outside of the growing season, may be critical to maintaining suitable habitat. There may be cost-effective adjustments to river levels that could be provided by the project that would improve the long-term survival of the taxon.

Proposed Methodology

Steps toward achieving the objectives of the study will include surveying the elevation of existing bolts (benchmarks) and establishing new ones. Developing models to predict water levels relative to cfs values at the Lebanon gage at each of the JMV sites could be accomplished with data loggers and opportunistic or planned high water releases.

Effort and Cost

The level of effort and cost will depend in part on the methodology chosen to derive water level forecast models. The basic objective of documenting elevation of benchmarks relative to river levels should be achievable at relatively low cost, and the full objective of modeling inundation of JMV plants relative to releases should be achievable at low to moderate cost.

Appendix D

Study Request: River Levels Relative to RTE Plant Species and Exemplary Natural Communities (Project Nos. 1892, 1855, and 1904)

Goals and Objectives

The goal of the study is to assess the extent to which fluctuations in river level affect populations of state-Threatened and Endangered plants, rare plants (S1 and S2), and exemplary natural communities. The objectives include identifying the number of rare elements that are likely to be negatively impacted, and assessing their importance to the conservation goals of the state of NH.

Resource Management Goals

The NH Native Plant Protection Act of 1987 (RSA 217-A) states that "To the extent possible actions funded or carried out by state agencies shall not jeopardize the continued existence of any protected plant species or exemplary natural community." The NH Natural Heritage Bureau (NHB) requests that FERC recognize this state priority and consider project impacts to state-listed and exemplary natural communities.

Public Interest Considerations

Not applicable

Existing Information

A total of 149 rare plant populations and 10 exemplary natural communities are mapped in the NHB database as occurring at the edge of the Connecticut River within the area affected by the three lower Connecticut River dams (FERC Project Nos. 1892-026, 1855-045, and 1904-073). The plants occur mostly in clusters within particularly significant habitats (e.g. islands and riverside seeps). The majority (65%) have not been surveyed within the last 10 years, so their current condition is unknown. In addition, several other rare plant populations and exemplary natural communities are predicted to occur along stretches of the river that have not been surveyed specifically for these elements.

Project Nexus

River level fluctuations due to project operations have significant effects on plant populations and natural communities along the river's edge through a combination of erosion and frequent cycles of wetting and drying.

Proposed Methodology

We are requesting surveys of river stretches that experience significant fluctuations in water level during power generation, to determine what state-rare species and exemplary natural communities are likely to be affected and to assess their current condition. The NHB database will provide a means of assessing the significance of any impacts by determining how the condition of occurrences along the CT River bank compares to that of occurrences elsewhere in the state, and what proportion they represent of all known NH occurrences.

Target elements: Riparian and wetland plant species and natural community types identified as occurring in the impact area based on a GIS analysis by the NH and VT Natural Heritage programs.

Geographic extent: The study should cover areas not only below the dams but also along the banks of the reservoirs. River banks and aquatic bed habitats would be the primary areas of interest. In areas where state-rare natural community types occur adjacent to the river the study might extend further landward.

Survey methods: The approach would be to conduct a water-based survey during summer (low water levels). Each bank of the river and river/reservoir shallows would be searched for (a) potential exemplary natural communities and (b) target rare species.

Survey timing: One survey would be conducted in mid to late summer.

Data collection: The surveyor(s) will collect standard data using Natural Heritage methodology at each site where a rare element is located, using forms provided by NH and VT Natural Heritage programs.

- Plant species: data collected will include a count or estimate of individuals present, reproductive status (e.g., % of individuals flowering or fruiting), and a list of associated species. Population extent will be documented with GPS points at the upstream and downstream extent of each population. Specimens or diagnostic photographs will be collected as needed to confirm identification (following Natural Heritage guidelines for collecting rare plants).
- Natural communities: examples judged to potentially be exemplary (based on size, condition, and landscape context) will be documented using Natural Heritage forms. Classification of natural community types should follow NHB's 2011 classification (Sperduto, Daniel and William Nichols. 2011. Natural Communities of New Hampshire. Second Edition. NH Natural Heritage Bureau. Concord, NH.). Final determination of exemplary status will be made by Natural Heritage ecologists based on field data collected during the survey and GIS analysis of landscape context.

Effort and Cost

This study will require significant effort due to the total length of the project area (approximately 130 miles). Costs will largely be based on staff time and transportation expenses.