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December 31, 2013

**VIA ELECTRONIC FILING**

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20426

**Re: TransCanada Hydro Northeast Inc.;**
Project No. 1892-026 – New Hampshire / Vermont
Project No. 1855-045 – New Hampshire / Vermont
Project No. 1904-073 – New Hampshire / Vermont
Revisions to ILP Revised Study Plan

Dear Secretary Bose:

TransCanada Hydro Northeast Inc. ("TransCanada"), licensee for the Wilder, Bellows Falls and Vernon Projects respectfully submits study plan revisions based upon discussions held on November 26, 2013 at the FERC study Plan meeting and on a December 18, 2013 conference call. In its letter Order dated December 13, 2013, the Commission requested TransCanada to file its study plan revisions no later than December 31, 2013, together with proof of stakeholder consultation. In the event TransCanada does not adopt a stakeholder recommendation, it should also include the rationale behind not adopting such.

As discussed at the November 26th meeting, TransCanada proposes several revisions to its Revised Study Plan filed on August 14, 2013. The revisions reflect concerns about appropriate baseline study conditions, schedule and scope for studies directly affected by Entergy's decision to shut down the Vermont Yankee Nuclear Plant, effectively eliminating a significant thermal discharge into the Connecticut River above Vernon Dam. Attachment A to this letter includes an introduction to our proposed changes as well as specific study plan language changes – added text is highlighted and removed text is shown by strike-through and highlight.

On December 16, 2013 TransCanada distributed via email, its proposed revisions, a request for comments on the revisions and a conference call schedule to stakeholders that had attended the November 26 meeting as well as those in our relicensing Aquatics Working Group (Attachment B). On December 18, 2013, TransCanada held a conference call to discuss each of

the proposed revisions and receive verbal feedback and comments. Comments, with the exception of the Study Plan 18 comment discussed below, were incorporated and the proposed revisions were redistributed the same day (included in Attachment B) . In order to meet the December 31 deadline for filing our final revisions we asked stakeholders to provide written comments as quickly as possible to allow TransCanada to adopt or respond to them, and include both within this filing. Notes from the December 18 conference call are provided as Attachment C.

TransCanada received three written responses to its December 18 distribution and call for final comments that are attached to this filing as Attachment D and described below:

1. The Nature Conservancy: proposed changes to the study plans are sufficient to account for the closure of Vermont Yankee. ***No TC response necessary***

2. Vermont Agency of Natural Resources (VANR):
   - VANR is in agreement with the modifications made by TransCanada to studies 6, 13, 21, and 23. ***No TC response necessary.***
   - TransCanada is proposing changes to Study 18, American Eel upstream passage, that include condensing both the systematic eel surveys and the temporary/portable eel trap passes into the same study year. The current schedule in the revised study plan calls for each task to be completed in separate study years. VANR recognizes that the modified approach may reduce variability between years, but it also increases the risk that sufficient data may not be collected during the period of study.

     VANR recommends that language be included in the final study plan that both recognizes the increased risk of the modified schedule and provides an avenue for resource agencies to request additional study if agency review deems that the data collected under the condensed schedule is not sufficient to address the goal of the study. ***See TC response to "increased risk" and insufficient data collection" below as well as in Attachment C 12-18-2013 Conference Call notes.***

3. New Hampshire Fish and Game Department (NHFG):
   - I have reviewed TransCanada's amended study plan for Studies 6, 13, 18, 21 and 23 that were revised due to the shutdown of Vermont Yankee in 2014 (final version 12-18-13). Overall, I approve of the amended study plan. ***No TC response necessary.***
     As mentioned during the conference call, there was concern that video cameras in the fishways (detailed in Study Plan 18) might not detect eels that are in the general area as undesirable flows may prohibit eels from reaching the locations where video cameras are stationed. Accordingly, I support the use of a floating eel trap/pass at these locations. ***TC Response: We intend as stated in the Study plan to use floating eel trap passes at suitable locations where eels are detected. We do not anticipate the base of the fishways to be a likely location, however, as there is no leakage through the ladders, whereas there is leakage at many other locations where such devices may be suitable if eels are present. Nonetheless, nothing in the Study Plan as written suggests that the base of the fishways will be excluded from our systematic survey component of this study. A similar comment and response was also captured in Attachment C 12-18-2013 Conference Call notes.***

- Additionally, it should be made clear that if eel data collected in 2015 for Study 18 are insufficient and/or there are anomalous environmental conditions during the 2015 field season, we feel it will be necessary to repeat the study in 2016. ***See TC response to "increased risk" and insufficient data collection" below as well as in Attachment C 12-18-2013 Conference Call notes.***

4. US Fish and Wildlife Service (FWS)
   First three comments were on the TransCanada's Study #18 introduction narrative.
   - At the meeting, the FWS stated that it was not aware of any scientific studies indicating a temp. effect on upstream eel migration (outside of the estuary) and that, unless there was a clear temp. difference along the dam and powerhouse (which VY studies reportedly indicated there wasn't), the FWS would be OK with the study starting in 2014. However, because stakeholders did not know whether there was a temp. effect or not, and therefore it is possible there may be an effect, the FWS did not object to delaying initiation of the study until 2015. ***TC Response: This is a comment on the Study Plan 18 narrative and not on revisions to the Study Plan itself. TC sees no conflict with the proposed study plan and this comment.***
   - During the Dec. 18th conf. call the FWS brought up passage data from the Holyoke Project to highlight our rationale for requesting a 2 yr. study. At Holyoke, there is substantial seasonal variability both in passage location and passage numbers. The concern with trying to gather all data in one year is that this type of variability may make it difficult to identify the proper locations for deploying eel traps in order to gather sufficient data to develop recommendations/prescriptions. This potential lack of data would not be due to "anomalous" envir. Conditions, but rather to eel passage dynamics. ***TC Response: This is a comment on the Study Plan 18 narrative and not on revisions to the Study Plan itself. See TC response to "increased risk" and insufficient data collection" below as well as in Attachment C 12-18-2013 Conference Call notes.***
   - It would be more appropriate to say that there was a general willingness to consider this approach. ***TC Response: This is a comment on the Study Plan 18 narrative and not on revisions to the Study Plan itself. TC sees no conflict with the proposed study plan and this comment***
   - During the conf. call, TC indicated that it would attempt to deploy eel traps within 24 hrs. of observing a "concentration" of eels at a given location. This should be reflected in the plan. ***TC Response: This issue was discussed on the 12-18-2013 Conference Call. The revisions issued on 12-18-2013 following the Confernce Call were intended to address this concern. This appears to be a comment on the 12-16-2013 <u>pre-conference call</u> set of revisions. No further TC response is necessary.***
   - As noted by FWS on the Dec. 18th conf. call, the within-ladder video monitoring is not designed to maximize the potential to capture ladder usage by eels – as they are bottom-oriented and may fall between the screening (??). However, the FWS does not oppose analyzing the video data for whatever eel passage info it may provide. ***TC Response: We agree. As indicated above and in the 12-18-2013 Conference Call notes, the use of video is related to Study 17 not specifically for the purpose of Study 18 but may provide additional data.***
   - Based on the rationale described in Comment GM2, above, the FWS recommended on the Dec. 18th conf. call that the schedule include contingent

language to allow for a second year of study, should 2015 results provide insufficient data – due not to anomalous envir. Conditions but to eel passage dynamics. ***See TC response to "increased risk" and insufficient data collection" below as well as in Attachment C 12-18-2013 Conference Call notes.***

TransCanada appreciates stakeholder willingness to provide comments on such a short turnaround schedule and believes it understands the expressed concerns over increased risk stated with regard to Study 18. We also acknowledge that similar verbal comments were provided by the US Fish and Wildlife Service and the Connecticut River Watershed Council during the December 18, 2013 conference call.

TransCanada, however, continues to disagree that there is any "*increased risk*" (VANR) associated with its proposed revisions and disagrees that "*insufficient*" collections (NHFG, FWS) would categorically warrant repeating the study in a second year. We do understand that anomalous conditions or even confusing data might warrant repeating the study. As noted by FERC staff during the December 18 conference call, the ILP process accommodates for the potential of anomalous conditions occurring during a study year. TransCanada contends that confounding data or results should be addressed through the study review and comment process built into the ILP process, as is the case with all studies, and could lead to repeating all or a portion of the study. This is not the same as "insufficient" collections.

With respect to "*recognizing the increased risk of the modified schedule*", "*condensed schedule*", or "*insufficient data*" TransCanada disagrees. While the proposed revision has condensed the schedule by combining the installation of eel traps into the same year that observations and surveys occur (recognized by several stakeholders as reducing variability in the study plan), it has not altered the risk of collection of information. In our initial study plan, we proposed to conduct surveys in Year 1 and only place eel trap passes in Year 2 where they were noted in Year 1 – *"Should adequate concentrations of eels be identified during the systematic surveys conducted during the first year of study, temporary eel trap passes will be installed and operated at each of the three projects during the second year of study. If concentrations of eels are not located due to low abundance below a project, then eel trap passes will not be fished at that site."* The initial method proposed, placing eel traps where adequate concentrations of eels are identified, will not change, nor will the duration or length of the survey period be reduced. However, conducting both aspects of the study in the same year will actually reduce the risk of missing eels that find different access routes in different years, i.e., annual variability. This reduced variability in the revised study plan was recognized by several stakeholders.

Additionally, the purpose of the study, in part, is to assess presence of American eel below each project. We question what constitutes "insufficient data" with respect to the stakeholder comments. We anticipate that the number of American eels below each dam will decrease with each successive upstream dam such that the number of eels below Vernon will likely be significantly higher than numbers below Wilder. TransCanada therefore believes the data and results should be reviewed and discussed, taking into account the specific dam and its location. Low numbers or observations may represent sufficient data that indicates a small eel presence at a location or dam.

TransCanada appreciates the opportunity to propose revisions to its previously filed Study Plan and looks forward to the Commission issuing its Determination on the remaining 20 studies

by February 17, 2014. If there are further questions regarding this matter, please contact me at 603-498-2851 to discuss things further. Thank you for your consideration.

Sincerely,

John L. Ragonese
FERC License Manager

# Attachment A

**Proposed Revisions to Study Plans for Study #'s 6, 13, 18, 21 and 23**

## Introduction

FERC held a technical meeting among TransCanada and stakeholders involved in the relicensing of the Wilder, Bellows Falls and Vernon projects. The meeting was held on November 26, 2013 in Brattleboro, VT for the purpose of discussing impacts of the planned Vermont Yankee (VY) closure on December 29, 2014 on the schedule and scope of TransCanada's aquatics-related relicensing studies. Stakeholders and TransCanada agreed at the meeting that some studies planned for 2014 should be delayed until 2015 after VY's closure to ensure that study baselines for evaluation of project effects reflect the baseline environmental conditions expected in the future.

At the meeting, TransCanada committed to consult with stakeholders and file an amended study plan in December, 2013 for five of the studies (Studies 6, 13, 18, 21 and 23). On December 13, 2013 FERC issued an Interim Schedule for Study Plan Determination and required TransCanada to file the amended study plans by December 31, 2013. FERC specified that amended study plans should include proof of consultation with stakeholders. In the event TransCanada does not adopt a stakeholder recommendation, the amended study plan should also include TransCanada's reasons based on project-specific information. General study schedule changes as agreed at the meeting are indicated in the table below.

| Study | Summary of Stakeholder Recommendations |
|---|---|
| 6 -- Water Quality Monitoring and Continuous Temperature Monitoring | Initiate study in 2015. TransCanada will propose minor modifications to study; consult with agencies and file an amended study plan by December 31, 2013. |
| 7 -- Aquatic Habitat Mapping | No Change |
| 8 -- Channel Morphology and Benthic Habitat Study | No Change |
| 9 -- Instream Flow Study | No Change |
| 10 -- Fish Assemblage Study | Initiate study in 2015 |
| 11 -- American Eel Survey | Initiate study in 2015 |
| 12 -- Tessellated Darter Survey | Initiate study in 2015 |
| 13 -- Tributary and Backwater Area Fish Access and Habitats Study | Initiate study in 2014. TransCanada will propose minor modifications to study; consult with agencies and file an amended study plan by December 31, 2013. |
| 14 -- Resident Fish Spawning in Impoundments Study | Initiate study in 2015 |
| 15 -- Resident Fish Spawning in Riverine Sections Study | Initiate study in 2015 |
| 16 -- Sea Lamprey Spawning Assessment | Initiate study in 2015 |
| 17 -- Upstream Passage of Riverine Fish Species Assessment | Initiate study in 2015 |
| 18 -- American Eel Upstream Passage Assessment | Initiate study in 2015. TransCanada will propose minor modifications to study; consult with agencies and file an amended study plan by December 31, 2013. |
| 19 -- American Eel Downstream Passage Assessment | Initiate study in 2015 |
| 20 -- American Eel Downstream Migration Timing Assessment | Initiate study in 2015 |
| 21 -- American Shad Telemetry Study – Vernon | Initiate study in 2015. TransCanada will propose minor modifications to study; consult with agencies and file an |

| Study | Summary of Stakeholder Recommendations |
|---|---|
| | amended study plan by December 31, 2013. |
| 22 -- Downstream Migration of Juvenile American Shad - Vernon | Initiate study in 2015 |
| 23 -- Fish Impingement, Entrainment, and Survival Study | Initiate study in 2015 |
| 24 - Dwarf Wedgemussel (Alasmidonta heterodon) and Co-Occurring Mussel Study | No Change |
| 25 -- Dragonfly and Damselfly Inventory and Assessment | Initiate study in 2015 |
| New -- Vernon Hydroacoustic Study | This is a requested study modification for multiple studies, and is not proposed by TransCanada. If this study modification is approved in the study plan determination, requesters suggest it be initiated in 2015. |

As discussed at the meeting, the Revised Study Plan (RSP, filed August 8, 2013) requires additional modifications to some studies to account for the post-VY baseline and to eliminate study aspects that are no longer needed. For those studies TransCanada's proposed RSP modifications are detailed below.

## Proposed Revisions to Study Plans - December 2013

TransCanada's proposed RSP revisions are detailed below. All additions and deletions are highlighted, deletions also include a strikethrough. .

## Study 6 – Water Quality Monitoring Study

*Stakeholders and TransCanada agreed that the Water Quality Monitoring Study should be delayed until 2015. It was also proposed and following a 10-minute caucus, stakeholders indicated agreement that additional transect temperature monitoring at station V-01 beyond the planned 10-day low flow period would not be necessary with the closure of Vermont Yankee in 2014. Therefore, TransCanada proposes to modify the RSP as follows:*

### Page 68, first paragraph:

Continuous water temperature monitoring at 15-minute intervals will be conducted at the mouths of the following 10 major tributaries to the Connecticut River: Waits, Ompompanoosuc, Mascoma, White, Sugar, Black, Williams, Cold, Saxtons, and West rivers. Monitoring sites will be located such that the data are representative of the water temperature of the tributary inflow to the Connecticut River, but the exact locations will be located in the field as determined by access and the ability to capture representative water temperature of the tributary inflow. Continuous water temperature monitoring will also occur at the 16 mainstem Connecticut River sites ~~and at a transect in the Vernon forebay area~~. In addition, this study will include continuous water temperature monitoring at transects at the monitoring locations within the impoundments during the 10-day, low-flow period.

## Page 68, third and fourth paragraphs:

From the first week of April (conditions permitting) through November 15 (conditions permitting), tributary data loggers will continuously monitor water temperature only. During this same period, continuous monitoring of water temperature will occur at the 16 mainstem water quality stations ~~and at the Vernon Project forebay~~. At each of the four datasonde monitoring locations above or in the three impoundments, at least 10 days of data will be collected at 15-minute increments during a period of low flow (<3 x 7Q10) and high temperatures (preferably over 23°C) between June 1 and September 30.

At the datasonde monitoring locations in the impoundments during the 10-day, low-flow, and high-temperature period, transects will be established for additional water temperature data collection. These transects will consist of three stations (including the mid-channel, long-term datasonde) perpendicular to the flow with the water temperature data loggers at depths of 1 meter, mid-depth, and 1 meter from the bottom recording at least 10 days of data at 15-minute intervals. ~~In addition, a transect will be established at the Vernon Project forebay with up to five stations with water temperature data loggers set at depths of 1 meter below the water surface, mid-depth, and 1 meter from the bottom to continuously record data from April 1 through November 15, conditions permitting.~~

Page 71, last two entries in Table 6-2:

| Task | Locations | Description | Sampling Frequency | Start Date | End Date |
|---|---|---|---|---|---|
| Water temperature continuous transect monitoring | W-04, W-03, W-02, W-01, BF-04, BF-03, BF-02, BF-01, V-04, V-03, ~~and~~ V-02 and V-01 | Monitoring of temperature via deployed data logger with automatic logging. Measurements taken at three stations (including the mid-channel long-term datasonde) perpendicular to the flow. At each station a data logger will be placed at 1 meter below the surface, mid-depth, and 1 meter above the bottom at the three transect locations | 15 min. | A 10-day, low-flow period between June 1 and Sept. 30 | NA |
| ~~Water temperature continuous transect monitoring at Vernon forebay~~ | ~~V-01~~ | ~~Monitoring of temperature via deployed data loggers. Measurements taken at the surface, mid-depth, and near bottom at three to five transect locations~~ | ~~15 min.~~ | ~~April 1 (or as soon thereafter as safe to deploy units)~~ | ~~Nov. 15 (unless unsafe conditions are expected to preclude data collection)~~ |

**Page 74:**

**SCHEDULE**

Water quality sampling specific to this study will occur in the ~~first~~ second study year (2015~~4~~). The study will commence the first week in April or as soon as safe to deploy temperature monitors, and will continue through November 15 or sooner if it becomes unsafe to collect additional data. The exact start and end dates will depend on safe conditions for unit deployment and retrieval. Schedules for water quality monitoring associated with other studies will be as described in those study plans.

## Study 13 – Tributary and Backwater Area Fish Access and Habitats Study

*At the technical meeting stakeholders reiterated their request to obtain water quality data (DO, pH, conductivity and turbidity) in addition to temperature at the study's selected sites within the Vernon project-affected area after Vermont Yankee shuts down.*

**Page 148, first full paragraph:**

During the study year (2014), the selected sites will be studied further. Water-level recorders will be placed in a random subset of applicable backwaters and tributary areas and will collect hourly depth changes and 15-minute water temperature data. Additional water quality data will be collected (temperature, DO, pH, conductivity, and turbidity) at the subset of sites ultimately selected for additional evaluation in this study with those sites based on the results of Study 7 and in consultation with the aquatics working group. Water quality data as described above will also be collected in 2015 at those selected sites within areas previously affected by the Vermont Yankee thermal discharge.

## Study 18 – American Eel Upstream Passage

*TransCanada originally proposed to conduct the American Eel Upstream Passage Study in a single study year (2014) as described in the Proposed Study Plan (PSP, filed April 16, 2013) Methods section on pp. 126-127, and in the Schedule section on page 128. Stakeholders commented on the PSP during the study plan meetings, and recommended conducting the study over two study years, with systematic surveys conducted in year one and temporary eel trap devices installed in year two at appropriate locations based upon suitable eel concentrations detected in the first study year, and after consultation with the working group. Although TransCanada and its consultant did not feel that a two-year study was needed to accomplish those tasks, the Updated Proposed Study Plan (filed on July 8, 2013) and the RSP filed on August 8, 2013 was modified by incorporating these tasks in successive 2014 and 2015 study seasons. The RSP reflect those changes in the Study Area and Study Sites section on page 183; in the Methods section on pp. 184-185; and in the Schedule section on page 186.*

*At the technical meeting stakeholders and TransCanada agreed that this study should be delayed until 2015 after the Vermont Yankee closure. Without further revision, the study plan schedule implies that the second task involving setting of eel traps would presumably occur the following*

*year in 2016. TransCanada proposes to revise the study plan to conduct both systematic studies and eel traps in a single year. It will have personnel and resources available to immediately install traps, typically not difficult or complicated. We will be able to identify locations and immediately place eel traps at those locations. This will ensure a better association with observed activity and collection or trapping potential. Conducting these related steps over a two-year period introduces variation in environmental conditions that could influence and distort the relationship between observations and collection. There does not seem to be any benefit to delaying the collection portion of this study plan into 2016, after filing of the application when we believe we can accommodate it within the same year as systematic surveys are performed.*

*TransCanada and its consultant discussed these issues informally with FWS staff after the technical meeting on November 26, 2013 and there seemed to be a general acceptance of this approach. Sufficient numbers of pre-fabricated eel trap passes will be available onsite. They can be deployed quickly during the systematic surveys if eels are concentrated in sufficient numbers below project dams. This approach negates the need for a second study year, provides for better study results and reflects the original study proposal. Therefore, TransCanada proposes to modify the RSP as follows.*

## Pages 183 - 184:

**STUDY AREA AND STUDY SITES**

The study area includes the tailrace and spillway locations at the Wilder, Bellows Falls, and Vernon dams and the Bellows Falls bypassed reach. During the first year of study, systematic surveys will be conducted at each site to document the presence and relative abundance of eels. Surveys will be conducted in the spillway areas, especially where there is significant spill or leakage flow where eels may attempt to climb. Visual searches and eel pot trapping will also be conducted around the fish ladders and in the Bellows Falls bypassed reach ~~during the first year of study~~. If needed ~~during the second year of study~~, temporary eel trap passes will be installed in areas downstream of project spillways, fish ladders, and/or bypassed reaches where concentrations of eels were identified during systematic surveys.

**METHODS**

**Systematic Surveys ~~(Year 1)~~**

~~During the first year of study, v~~Visual surveys will be conducted at night, once per week, downstream of each dam on foot (wading) or from a boat from May 1 through October 15 (or when water temperature exceeds 50$^{o}$F). Visual surveys will be done in areas where eels are likely to congregate below each dam, such as spillways, places where there is significant leakage or overflow points along the dams, the Bellow Falls bypassed reach, and in areas near the upstream fish ladders. Data collected will include location (GPS coordinates), observation of eels (presence, absence, numbers, estimated sizes), time and date of observation, field notes on weather conditions, and moon phase. Other data that will be recorded include notes on project operations during sampling such as spill gates that may be open and/or spill conditions during high flows…

**Temporary/Portable Eel Trap Passes ~~(Year 2)~~**

Should adequate concentrations of eels be identified during the systematic surveys ~~conducted during the first year of study~~, temporary eel trap passes will be installed within 24 hours, to the

extent possible.~~, and operated at each of the three projects during the second year of study~~. If concentrations of eels are not located due to low abundance below a project, then eel trap passes will not be fished at that site. ~~Prior to the installation of any temporary eel trap passes, TransCanada will consult with the aquatics working group to review results from the year 1 systematic surveys. During that consultation, TransCanada will seek to reach agreement on appropriate locations for installation of eel trap passes during year 2.~~TransCanada will develop a communication and consultation protocol with the agencies and aquatics working group that will enable periodic and updated information on surveys, observations and the data from eel trap passes.

## Page 185, second full paragraph:

~~One of the temporary eel trap passes may be installed in the lower sections of fishways supplied with minimal attraction flow (0.5 to 1.0 cfs); however, this will only occur if the fishway is dewatered. In another study, Upstream Passage of Riverine Fish Species Assessment (Study 17), the three fish ladders will be operated during the open water period. Study 17 is planned for year 1, which would not conflict with eel trap pass placement in the fish ladders during year 2.~~
Video cameras will be placed in the fish ladders for Study 17 – Upstream Passage of Riverine Fish Species Assessment to be conducted in 2015, concurrently with this study. These cameras will record round-the-clock during the entire open water season and, once video data is analyzed, will provide sufficient information on eels attempting to use the ladders.

## Page 186:

**SCHEDULE**
Systematic surveys will begin at all three dams during the ~~first~~ second study year (201~~4~~5) on May 1 and continue through October 15, including weekly eel pot trapping and visual night surveys. Following periodic consultation with the fishery agencies and aquatics working group regarding results of the systematic surveys throughout the survey period, temporary eel trap passes will be installed ~~during the second study year (2015)~~ below the dams if concentrations of eels are found ~~during the first study year~~. ~~Two e~~Eel trap passes will be set in locations where eels were found congregating throughout the~~by~~ May 1-October 15 period.~~, and traps will be fished through October 15.~~ The field effort will cover 22 weeks of sampling~~ during both years 1 and 2~~, with the traps being fished every 2 to 3 days during that time period. The study report will be prepared after all field work and data analysis is completed.

## Study 21 – American Shad Telemetry Study – Vernon

*With the closure of VY, it is no longer appropriate to rely on the USGS data collected in 2011 and/or 2012 for determination of timing of the shad run in a post-VY baseline. However, the USGS data may still be helpful to this study in other ways as described in the study plan's Methods section. Therefore, TransCanada proposes to modify the RSP to include a limited review and evaluation of the USGS data to support this study's design and methodology. In addition, temperature tags are no longer needed since their purpose was to record water temperature as shad migrate past Vermont Yankee's thermal discharge, and proposed RSP modifications relative to temperature tags are also included below.*

## Page 208, last paragraph:

The study conducted in 2012 was a broad-scale monitoring of tagged shad that included monitoring in the tailwaters of the Vernon Project with near-field monitoring of the fish ladder entrance. Via PIT tags, the efficiency of the ladder to pass shad upstream was observed. Detection of post-spawned tagged shad (both PIT and radio) and perhaps downstream passage at Vernon may have been recorded. Although there is valuable information from the 2012 study, it has yet to be analyzed. ~~Therefore, a~~As a component of this study, a limited review of the 2012 data will be performed in ~~2013~~2014~~, pending timely receipt of the data. Those data will~~ to glean any information which may be used to fine tune the design of this study, including potential changes in sample size, in consultation with the aquatics working group as described in the methods section below.

## Page 209-210:

**METHODS** ***(first two paragraphs only)***

It is expected that once the 2012 data have been ~~analyzed~~ evaluated~~in 2013~~, those data may contribute to existing information ~~to indicate timing of the shad run from Turners Falls to the Vernon Project,~~ on optimal placement of receivers and ~~residency of tagged shad at the Vernon Project prior to passing upstream, efficiency of shad passage through the fish ladder, and perhaps numbers of post spawned shad returning downstream through the Vernon Project. Another variable the 2012 study may assist with is~~ selection of radio frequencies for this study. ~~Analysis~~ Review of those data may provide insight into which frequencies may be noisier, thus avoided, in the vicinity of the project. ~~Timing of migration through the Turners Falls impoundment and residence time of tagged shad in the Vernon tailwaters during 2012 will help determine sample size for this study.~~ Results of the ~~analysis~~ review of the 2012 data will be discussed with the aquatics working group and critical modifications to the field work described below for the upstream passage assessment in this study will be discussed based upon this consultation.

TransCanada will monitor the timing of shad upstream migration through the upper portion of the Turners Falls impoundment as the 2012 study did, and monitor shad behavior and movement near-field to the Vernon turbine discharges and the spillway areas. This behavior will be correlated to turbine discharge regimes, and effects will be assessed. Ability of tagged shad to locate the fish ladder entrance will be assessed and related to project operations. Once in the fish ladder, efficiency of passage will be determined similarly to the 2012 study. PIT readers in the fishway, as well as one of the radio monitoring stations, will record shad passage. After passage at Vernon, timing of the shad migration as far upstream as the Bellows Falls Project will be determined. Tagged shad will be manually tracked and spawning areas located. Spawning will be observed and egg collections should yield measurable success evaluations. Emigration of post-spawned tagged shad will be evaluated and downstream passage routes as well as expediency of passage at Vernon Project will be identified. Passage survival through the project will be assessed with the use of motion sensor~~/temperature~~ radio tags.

## Page 213, first paragraph:

Radio receivers will be Lotek Wireless, Inc. (Lotek) SRX_400 and SRX_600 units and a Digital Spectrum Processor data logging unit. Radio transmitters will be coded VHF transmitters supplied by Lotek, Newmarket, Ontario, Canada. The radio tags (model number MCFT-3EM) are digitally encoded and will transmit signals on two to four frequencies (channels) within the 150- to 151-megahertz band. Each radio tag will contain a unique pulse train to allow for individual fish identification (codes). Each cylindrical radio tag measures 11 mm in diameter, 49 mm in length, weighs 4.3 grams in water, and has a 455-mm-long whip antenna. The radio tags will propagate signals at varying rates between 2.0 and 3.0 seconds and will have a minimum battery life of approximately 206 days. Each tag will incorporate motion ~~and temperature~~ sensing capabilities. If a specimen becomes stationary or regurgitates its transmitter, detection of that signal will verify via pulse code that the transmitter is stationary. ~~In addition, every detection event of radio-tagged shad will record its temperature within the data log. Temperature and m~~Motion data are transmitted via pulse codes, thus, can only be discerned during detection of the radio signals.

## Page 215 - 216:

**ANALYSIS**

After all telemetry data collected by USGS during its 2012 study that is pertinent to the Vernon Project are made available to TransCanada, the data will be ~~compiled, reduced, sorted by individual, and analyzed~~reviewed to provide indications of proper placement of receivers and selected radio transmitter frequencies~~, to the extent the data allow, a concise representation of migrating shad movement and behavior in the tailrace area of Vernon dam. Depending on the quality of the data, migration routes, residency times, ladder efficiencies, and effects of project operations on passage efficiency will be ascertained. If data are conducive to determining downstream passage of post-spawned shad, they will be analyzed to discern success of downstream passage as well.~~

For this study, all radio transmitters will have a unique frequency or code, thus allowing discrimination by individual. ~~In addition, temperature sensors incorporated within the transmitters will allow the fish's ambient temperature to be recorded when individual is being detected.~~ The motion sensing ability of the transmitters will be an instantaneous measure of the transmitter's mobility status (i.e., ~~in the fish or not).~~active or sedentary). All radio-telemetry data from each monitor station will be combined, compiled, reduced, and sorted by individual shad. Pertinent data made available from the related FirstLight study will be incorporated into the TransCanada dataset associated with this study.

Resultant refined data will illustrate individual shad movement ~~and ambient water temperature~~ about Vernon dam tailwater areas and indicate holding areas, if any, and timing of upstream passage. PIT readers within the fish ladder will supply information as to the efficiency of the ladder to pass shad. Locations of each radio-tagged shad will be presented spatial-temporally in tabular and graphic form, both in and around Vernon dam and upstream in the Vernon impoundment and Bellows Falls downstream reach. Project operational data will be presented and compared to shad movement to determine effects on shad movement and passage at the dam. The spawning location of each fish within the study area, if applicable, will be identified. Water temperature data recorded ~~by the radio tags and~~ by data loggers set for the Water Quality Study (Study 6) will be presented in context with shad location and project operations.

Congregation and spawning areas of radio-tagged American shad will be compiled and presented graphically on maps and possibly with aerial photography. Quantification and qualification of shad egg collections will be presented in tabular form. Density of eggs collected per sample will be determined by enumerating a sub-sample and relating that to the volume of water filtered. Spawning activity and fervor will be described subjectively and relative to other spawning activities observed. Factors affecting egg collection (i.e., water turbulence, high velocities, shallow depth) will be noted.

Emigration timing, residence time, passage route selection, and survival of passage for each post-spawned shad will be presented in tabular form. Shad presence and timing of passage will be related to project operations data to characterize what project effects, if any, on downstream passage can be discerned. ~~Temperature sensors will indicate water temperatures each tagged shad occupy as they migrate about the forebay area prior to downstream passage.~~ Motion sensors will immediately identify the status of each transmitter, whether it is mobile or stationary after passage. Attempts will be made to discern whether the fish regurgitated the tag or whether it suffered mortality after downstream passage.

## Page 217-218:

**SCHEDULE**

~~Analyses~~ Review of all data from USGS 2012 shad migration study related to the Vernon Project is expected to be completed by the end of ~~2013~~2014, prior to the first year of this study.

Field work for this study will occur in the ~~first~~ second study year (2015~~4~~). American shad collection and tagging will likely commence at the Holyoke fishlift from mid-April to early May, depending on water temperature. All specimens should be tagged and released by early June. Shad will be monitored at Vernon dam and tailwaters, and once most specimens have passed upstream and arrived at spawning sites, as determined by monitoring, by mid- to late-June, field observations and egg collections will commence. The field observations will likely end in early to mid–July when specimens should begin to emigrate. Most post-spawned shad can be expected to pass downstream of Vernon dam by late July. Data compilation, reduction, analyses, and report preparation will be conducted after the end of the field season.

## Study 23 – Fish Impingement, Entrainment and Survival Study

This study relies in part on the results of associated studies including fish community data collected during the Fish Assemblage Study (Study 10). Fish community data from that study will be used to identify the target species list that will be assessed to identify potential impingement and entrainment effects. In addition, findings from the two American shad studies at the Vernon Project (Studies 21 and 22) and from the two American eel downstream assessments (Studies 19 and 20) may provide useful insight into the determination of survival for these diadromous fish species. Stakeholders and TransCanada agreed at the technical meeting to adjust the schedule for this study and TransCanada proposes the following modification to the RSP.

## Page 233:

**SCHEDULE**

This desktop assessment of impingement, entrainment, and turbine survival will be conducted during the second study year in the ~~spring~~ late summer and fall of 2015. It will rely on results from the Fish Assemblage Study (Study 10), which will be conducted during study year ~~1~~ 2 and will allow for proper identification of the target fish species. In addition, findings from the associated studies referenced above (Studies 19, 20, 21, and 22) also to be conducted in study year 2 may provide useful insight into the determination of survival for diadromous fish species.

# Attachment B

## 12-16-2013 and 12-18-2013 Email Distribution of SP revisions to Stakeholders

| | |
|---|---|
| **From:** | John Ragonese |
| **To:** | "andrew.gast-bray@lebcity.com"; "rstira@gdfsuezna.com"; "brett.battaglia@hdrinc.com"; "bhanson@normandeau.com"; "cfoss@nhaudubon.org"; Cleveland Kapala; "dclem@lymeproperties.com"; "ddeen@ctriver.org"; "dmason@normandeau.com"; "dhjorth@louisberger.com"; "droyer@normandeau.com"; "dtrested@normandeau.com"; "ethan@biodrawversity.com"; "gabe.gries@wildlife.nh.gov"; "gregg.comstock@des.nh.gov"; "jeff.crocker@state.vt.us"; Jennifer Griffin; "McClammer@aol.com"; "john.howard@gdfsuezna.com"; John Ragonese; "john_warner@fws.gov"; "kkennedy@tnc.org"; "blackrivercleanup@yahoo.com"; "kenneth.hogan@ferc.gov"; "ken_sprankle@fws.gov"; "lael.will@state.vt.us"; "li@eurekasw.com"; "ldewald@entergy.com"; "mark.goodwin@lebcity.com"; "mwamser@gomezandsullivan.com"; "mary.mccann@hdrinc.com"; "mfischer@normandeau.com"; "matthew.carpenter@wildlife.nh.gov"; "melissa_grader@fws.gov"; "michael.sears@hdrinc.com"; "michael.chelminski@stantec.com"; "nicholas.Ettema@ferc.gov"; "nscormen@gmail.com"; "nsims@honors.umass.edu"; "owen.david@des.nh.gov"; "rsimmons@normandeau.com"; "Robert.Mitchell@hdrinc.com"; "rod.wentworth@state.vt.us"; "sara.cavin@uvlt.org"; "smaxwell@normandeau.com"; "shelley.hadfield@lebcity.com"; "steve.arnold@devinetarbell.com"; "seggers@normandeau.com"; "wendy@vermontjewel.com"; "tom.christopher@comcast.net"; "tpayne@normandeau.com"; Julia Wood; "tsullivan@gomezandsullivan.com"; "johnbenn@windhamregional.org"; DeWald, Lynn (ldewald@entergy.com); "sskibniowski@entergy.com"; "afisk@ctriver.org"; Erin O"Dea; "eric.davis@state.vt.us" |
| **Subject:** | TC Study Plan Revisions based upon VY shutdown effect on scope and schedule. |
| **Date:** | Monday, December 16, 2013 1:51:00 PM |
| **Attachments:** | Study Plan Modifications due to VY 12-16-13.docx |

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To TC Relicensing Aquatics Working Group and November 26, 2013 Study Plan meeting stakeholder attendees:

As discussed at the November 26th meeting, TransCanada proposes several revisions to its previously filed Study Plan based upon discussions concerning appropriate baseline study conditions, study schedule and scope for those studies directly related to Vermont Yankee's decision to shut down and effectively eliminate a significant thermal discharge into the Connecticut River above Vernon Dam. Below and attached, please find an introduction to our proposed changes as well as specific study plan language changes – ADDED text is highlighted; removed text is strike-through and highlighted.

We are seeking comments from stakeholders regarding these changes. Please note we did not specify these changes but discussed them with the participants including relevant agency staff on November 26, 2013. We will hold a conference call on Wednesday December 18th to discuss these changes and record any concerns or proposed suggestions. Conference Call info is shown below. Ultimately we would like to file revised study plans for the subject studies (including a track changes version) with the FERC prior to Christmas> We would ideally like to include concurring statements (sent to TC by email if possible.) This would not preclude you from filing comments, but we hope that our changes below reflect modest agreeable revisions such that we can move this process along as quickly as possible.

**TC Study Plan Revisions Conference Call:**
**Wednesday January 18, 2013 1:00 PM**
**Call-in Number: 800-914-3396**
**Passcode: 742925**

Thank you for your consideration on this matter.

**John L. Ragonese, FERC License Manager**
TransCanada
4 Park Street; Concord NH 03301

CELL: 603.498.2851 (best option); 603.225.5528; FAX 603.225.3260
Email: john_ragonese@transcanada.com

## Introduction

*FERC held a technical meeting among TransCanada and stakeholders involved in the relicensing of the Wilder, Bellows Falls and Vernon projects. The meeting was held on November 26, 2013 in Brattleboro, VT for the purpose of discussing impacts of the planned Vermont Yankee (VY) closure on December 29, 2014 on the schedule and scope of TransCanada's aquatics-related relicensing studies. Stakeholders and TransCanada agreed at the meeting that some studies planned for 2014 should be delayed until 2015 after VY's closure to ensure that study baselines for evaluation of project effects reflect the baseline environmental conditions expected in the future.*

*At the meeting, TransCanada committed to consult with stakeholders and file an amended study plan in December, 2013 for five of the studies (Studies 6, 13, 18, 21 and 23). On December 13, 2013 FERC issued an Interim Schedule for Study Plan Determination and required TransCanada to file the amended study plans by December 31, 2013. FERC specified that amended study plans should include proof of consultation with stakeholders. In the event TransCanada does not adopt a stakeholder recommendation, the amended study plan should also include TransCanada's reasons based on project-specific information. General study schedule changes as agreed at the meeting are indicated in the table below.*

| Study | Summary of Stakeholder Recommendations |
|---|---|
| 6 -- Water Quality Monitoring and Continuous Temperature Monitoring | Initiate study in 2015. TransCanada will propose minor modifications to study; consult with agencies and file an amended study plan by December 31, 2013. |
| 7 -- Aquatic Habitat Mapping | No Change |
| 8 -- Channel Morphology and Benthic Habitat Study | No Change |
| 9 -- Instream Flow Study | No Change |
| 10 -- Fish Assemblage Study | Initiate study in 2015 |
| 11 -- American Eel Survey | Initiate study in 2015 |
| 12 -- Tessellated Darter Survey | Initiate study in 2015 |
| 13 -- Tributary and Backwater Area Fish Access and Habitats Study | Initiate study in 2014. TransCanada will propose minor modifications to study; consult with agencies and file an amended study plan by December 31, 2013. |
| 14 -- Resident Fish Spawning in Impoundments Study | Initiate study in 2015 |
| 15 -- Resident Fish Spawning in Riverine Sections Study | Initiate study in 2015 |
| 16 -- Sea Lamprey Spawning Assessment | Initiate study in 2015 |
| 17 -- Upstream Passage of Riverine Fish Species Assessment | Initiate study in 2015 |
| 18 -- American Eel Upstream Passage Assessment | Initiate study in 2015. TransCanada will propose minor modifications to study; consult with agencies and file an amended study plan by December 31, 2013. |
| 19 -- American Eel Downstream Passage Assessment | Initiate study in 2015 |
| 20 -- American Eel Downstream Migration Timing Assessment | Initiate study in 2015 |
| 21 -- American Shad Telemetry Study – Vernon | Initiate study in 2015. TransCanada will propose minor modifications to study; consult with agencies and file an amended study plan by December 31, 2013. |
| 22 -- Downstream Migration of Juvenile American Shad - Vernon | Initiate study in 2015 |
| 23 -- Fish Impingement, Entrainment, and Survival | Initiate study in 2015 |

| | |
|---|---|
| Study | |
| 24 - Dwarf Wedgemussel (Alasmidonta heterodon) and Co-Occurring Mussel Study | No Change |
| 25 -- Dragonfly and Damselfly Inventory and Assessment | Initiate study in 2015 |
| New -- Vernon Hydroacoustic Study | This is a requested study modification for multiple studies, and is not proposed by TransCanada. If this study modification is approved in the study plan determination, requesters suggest it be initiated in 2015. |

*As discussed at the meeting, the Revised Study Plan (RSP, filed August 8, 2013) requires additional modifications to some studies to account for the post-VY baseline and to eliminate study aspects that are no longer needed. For those studies TransCanada's proposed RSP modifications are detailed below.*

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## Proposed Revisions to Study Plans - December 2013

*TransCanada's proposed RSP revisions are detailed below. All additions and deletions are highlighted, deletions also include a strikethrough. .*

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## Study 6 – Water Quality Monitoring Study

*Stakeholders and TransCanada agreed that the Water Quality Monitoring Study should be delayed until 2015. It was also proposed and following a 10-minute caucus, stakeholders indicated agreement that additional transect temperature monitoring at station V-01 beyond the planned 10-day low flow period would not be necessary with the closure of Vermont Yankee in 2014. Therefore, TransCanada proposes to modify the RSP as follows:*

### Page 68, first paragraph:

Continuous water temperature monitoring at 15-minute intervals will be conducted at the mouths of the following 10 major tributaries to the Connecticut River: Waits, Ompompanoosuc, Mascoma, White, Sugar, Black, Williams, Cold, Saxtons, and West rivers. Monitoring sites will be located such that the data are representative of the water temperature of the tributary inflow to the Connecticut River, but the exact locations will be located in the field as determined by access and the ability to capture representative water temperature of the tributary inflow. Continuous water temperature monitoring will also occur at the 16 mainstem Connecticut River sites ~~and at a transect in the Vernon forebay area~~. In addition, this study will include continuous water temperature monitoring at transects at the monitoring locations within the impoundments during the 10-day, low-flow period.

### Page 68, third and fourth paragraphs:

From the first week of April (conditions permitting) through November 15 (conditions

permitting), tributary data loggers will continuously monitor water temperature only. During this same period, continuous monitoring of water temperature will occur at the 16 mainstem water quality stations ~~and at the Vernon Project forebay~~. At each of the four datasonde monitoring locations above or in the three impoundments, at least 10 days of data will be collected at 15-minute increments during a period of low flow (<3 x 7Q10) and high temperatures (preferably over 23$^{o}$C) between June 1 and September 30.

At the datasonde monitoring locations in the impoundments during the 10-day, low-flow, and high-temperature period, transects will be established for additional water temperature data collection. These transects will consist of three stations (including the mid-channel, long-term datasonde) perpendicular to the flow with the water temperature data loggers at depths of 1 meter, mid-depth, and 1 meter from the bottom recording at least 10 days of data at 15-minute intervals. ~~In addition, a transect will be established at the Vernon Project forebay with up to five stations with water temperature data loggers set at depths of 1 meter below the water surface, mid-depth, and 1 meter from the bottom to continuously record data from April 1 through November 15, conditions permitting.~~

Page 71, last two entries in Table 6-2:

| Task | Locations | Description | Sampling Frequency | Start Date | End Date |
|---|---|---|---|---|---|
| Water temperature continuous transect monitoring | W-04, W-03, W-02, W-01, BF-04, BF-03, BF-02, BF-01, V-04, V-03, ~~and~~ V-02 and V-01 | Monitoring of temperature via deployed data logger with automatic logging. Measurements taken at three stations (including the mid-channel long-term datasonde) perpendicular to the flow. At each station a data logger will be placed at 1 meter below the surface, mid-depth, and 1 meter above the bottom at the three transect locations | 15 min. | A 10-day, low-flow period between June 1 and Sept. 30 | NA |
| ~~Water temperature continuous transect monitoring at Vernon forebay~~ | ~~V-01~~ | ~~Monitoring of temperature via deployed data loggers. Measurements taken at the surface, mid-depth, and near bottom at three to five transect locations~~ | ~~15 min.~~ | ~~April 1 (or as soon thereafter as safe to deploy units)~~ | ~~Nov. 15 (unless unsafe conditions are expected to preclude data collection)~~ |

## Page 74:

**SCHEDULE**

Water quality sampling specific to this study will occur in the ~~first~~ second study year (201~~5~~4). The study will commence the first week in April or as soon as safe to deploy temperature monitors, and

will continue through November 15 or sooner if it becomes unsafe to collect additional data. The exact start and end dates will depend on safe conditions for unit deployment and retrieval. Schedules for water quality monitoring associated with other studies will be as described in those study plans.

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## Study 13 – Tributary and Backwater Area Fish Access and Habitats Study

*At the technical meeting stakeholders reiterated their request to obtain water quality data (DO, pH, conductivity and turbidity) in addition to temperature at the study's selected sites within the Vernon project-affected area after Vermont Yankee shuts down.*

### Page 148, first full paragraph:

During the study year (2014), the selected sites will be studied further. Water-level recorders will be placed in a random subset of applicable backwaters and tributary areas and will collect hourly depth changes and 15-minute water temperature data. Additional water quality data will be collected (temperature, DO, pH, conductivity, and turbidity) at the subset of sites ultimately selected for additional evaluation in this study with those sites based on the results of Study 7 and in consultation with the aquatics working group. Water quality data as described above will also be collected in 2015 at those selected sites within areas previously affected by the Vermont Yankee thermal discharge.

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## Study 18 – American Eel Upstream Passage

*TransCanada originally proposed to conduct the American Eel Upstream Passage Study in a single study year (2014) as described in the Proposed Study Plan (PSP, filed April 16, 2013) Methods section on pp. 126-127, and in the Schedule section on page 128. Stakeholders commented on the PSP during the study plan meetings, and recommended conducting the study over two study years, with systematic surveys conducted in year one and temporary eel trap devices installed in year two at appropriate locations based upon suitable eel concentrations detected in the first study year, and after consultation with the working group. Although TransCanada and its consultant did not feel that a two-year study was needed to accomplish those tasks, the Updated Proposed Study Plan (filed on July 8, 2013) and the RSP filed on August 8, 2013 was modified by incorporating these tasks in successive 2014 and 2015 study seasons. The RSP reflect those changes in the Study Area and Study Sites section on page 183; in the Methods section on pp. 184-185; and in the Schedule section on page 186.*

*At the technical meeting stakeholders and TransCanada agreed that this study should be delayed until 2015 after the Vermont Yankee closure. Without further revision, the study plan schedule implies that the second task involving setting of eel traps would presumably occur the following year in 2016. TransCanada proposes to revise the study plan to conduct both systematic studies and eel traps in a single year. It will have personnel and resources available to immediately install traps, typically not difficult or complicated. We will be able to identify locations and immediately place eel traps at those locations. This will ensure a better association with observed activity and collection or trapping potential. Conducting these related steps over a two-year period introduces variation in environmental conditions that could influence and distort the relationship between observations and collection. There does not seem to be any benefit to delaying the collection portion of this study plan into 2016, after*

*filing of the application when we believe we can accommodate it within the same year as systematic surveys are performed.*

*TransCanada and its consultant discussed these issues informally with FWS staff after the technical meeting on November 26, 2013 and there seemed to be a general acceptance of this approach. Sufficient numbers of pre-fabricated eel trap passes will be available onsite. They can be deployed quickly during the systematic surveys if eels are concentrated in sufficient numbers below project dams. This approach negates the need for a second study year, provides for better study results and reflects the original study proposal. Therefore, TransCanada proposes to modify the RSP as follows.*

## Pages 183 – 184:

**STUDY AREA AND STUDY SITES**

The study area includes the tailrace and spillway locations at the Wilder, Bellows Falls, and Vernon dams and the Bellows Falls bypassed reach. During the first year of study, systematic surveys will be conducted at each site to document the presence and relative abundance of eels. Surveys will be conducted in the spillway areas, especially where there is significant spill or leakage flow where eels may attempt to climb. Visual searches and eel pot trapping will also be conducted around the fish ladders and in the Bellows Falls bypassed reach ~~during the first year of study~~. If needed ~~during the second year of study~~, temporary eel trap passes will be installed in areas downstream of project spillways, fish ladders, and/or bypassed reaches where concentrations of eels were identified during systematic surveys.

**METHODS**

**Systematic Surveys ~~(Year 1)~~**

~~During the first year of study, v~~Visual surveys will be conducted at night, once per week, downstream of each dam on foot (wading) or from a boat from May 1 through October 15 (or when water temperature exceeds 50$^{o}$F). Visual surveys will be done in areas where eels are likely to congregate below each dam, such as spillways, places where there is significant leakage or overflow points along the dams, the Bellow Falls bypassed reach, and in areas near the upstream fish ladders. Data collected will include location (GPS coordinates), observation of eels (presence, absence, numbers, estimated sizes), time and date of observation, field notes on weather conditions, and moon phase. Other data that will be recorded include notes on project operations during sampling such as spill gates that may be open and/or spill conditions during high flows…

**Temporary/Portable Eel Trap Passes ~~(Year 2)~~**

Should adequate concentrations of eels be identified during the systematic surveys ~~conducted during the first year of study~~, temporary eel trap passes will be installed quickly at those locations and operated at each of the three projects during the ~~second~~ first year of study, concurrently with the systematic surveys that will continue. If concentrations of eels are not located due to low abundance below a project, then eel trap passes will not be fished at that site. TransCanada will develop a communication and consultation protocol with the agencies and aquatics working group that will enable periodic and updated information on surveys and observations reasonably necessary prior to the installation of any temporary eel trap passes. ~~To review results from the year 1 systematic surveys. During that consultation, TransCanada will seek to reach agreement on appropriate locations for installation of eel trap passes during year 2.~~

## Page 185, second full paragraph:

~~One of the temporary eel trap passes may be installed in the lower sections of fishways supplied with minimal attraction flow (0.5 to 1.0 cfs); however, this will only occur if the fishway is dewatered. In another study, Upstream Passage of Riverine Fish Species Assessment (Study 17), the three fish ladders will be operated during the open water period. Study 17 is planned for year 1, which would not conflict with eel trap pass placement in the fish ladders during year 2.~~
Video cameras will be placed in the fish ladders for Study 17 – Upstream Passage of Riverine Fish Species Assessment also delayed until 2015, and thus concurrent with this study. These cameras will record round-the-clock during the entire open water season and, once video data is analyzed, will provide sufficient information on eels attempting to use the ladders.

## Page 186:

**SCHEDULE**
Systematic surveys will begin at all three dams during the ~~first~~ second study year (201~~4~~5) on May 1 and continue through October 15, including weekly eel pot trapping and visual night surveys. Following periodic consultation with the fishery agencies and aquatics working group regarding results of the systematic surveys throughout the survey period, temporary eel trap passes will be installed ~~during the second study year (2015)~~ below the dams if concentrations of eels are found ~~during the first study year~~. ~~Two e~~Eel trap passes will be set in locations where eels were found congregating throughout the~~by~~ May 1-October 15 period.~~, and traps will be fished through October 15.~~ The field effort will cover 22 weeks of sampling ~~during both years 1 and 2~~, with the traps being fished every 2 to 3 days during that time period. The study report will be prepared after all field work and data analysis is completed.

---

## Study 21 – American Shad Telemetry Study – Vernon

*With the closure of VY, it is no longer appropriate to rely on the USGS data collected in 2011 and/or 2012 for determination of timing of the shad run in a post-VY baseline. However, the USGS data may still be helpful to this study in other ways as described in the study plan's Methods section. Therefore, TransCanada proposes to modify the RSP to include a limited review and evaluation of the USGS data to support this study's design and methodology. In addition, temperature tags are no longer needed since their purpose was to record water temperature as shad migrate past Vermont Yankee's thermal discharge, and proposed RSP modifications relative to temperature tags are also included below.*

## Page 208, last paragraph:

The study conducted in 2012 was a broad-scale monitoring of tagged shad that included monitoring in the tailwaters of the Vernon Project with near-field monitoring of the fish ladder entrance. Via PIT tags, the efficiency of the ladder to pass shad upstream was observed. Detection of post-spawned tagged shad (both PIT and radio) and perhaps downstream passage at Vernon may have been recorded. Although there is valuable information from the 2012 study, it has yet to be analyzed. ~~Therefore, a~~As a component of this study, a limited review of the 2012 data will be performed in ~~2013~~2014~~, pending timely receipt of the data. Those data will~~ to glean any information which may be used to fine tune the design of this study, including potential changes in sample size, in consultation

with the aquatics working group as described in the methods section below.

## Page 209-210:

**METHODS** ***(first two paragraphs only)***

It is expected that once the 2012 data have been ~~analyzed~~ evaluated~~in 2013~~, those data may contribute to existing information ~~to indicate timing of the shad run from Turners Falls to the Vernon Project,~~ on optimal placement of receivers and ~~residency of tagged shad at the Vernon Project prior to passing upstream, efficiency of shad passage through the fish ladder, and perhaps numbers of post-spawned shad returning downstream through the Vernon Project. Another variable the 2012 study may assist with is~~ selection of radio frequencies for this study. ~~Analysis~~ Review of those data may provide insight into which frequencies may be noisier, thus avoided, in the vicinity of the project. ~~Timing of migration through the Turners Falls impoundment and residence time of tagged shad in the Vernon tailwaters during 2012 will help determine sample size for this study.~~ Results of the ~~analysis~~ review of the 2012 data will be discussed with the aquatics working group and critical modifications to the field work described below for the upstream passage assessment in this study will be discussed based upon this consultation.

TransCanada will monitor the timing of shad upstream migration through the upper portion of the Turners Falls impoundment as the 2012 study did, and monitor shad behavior and movement near-field to the Vernon turbine discharges and the spillway areas. This behavior will be correlated to turbine discharge regimes, and effects will be assessed. Ability of tagged shad to locate the fish ladder entrance will be assessed and related to project operations. Once in the fish ladder, efficiency of passage will be determined similarly to the 2012 study. PIT readers in the fishway, as well as one of the radio monitoring stations, will record shad passage. After passage at Vernon, timing of the shad migration as far upstream as the Bellows Falls Project will be determined. Tagged shad will be manually tracked and spawning areas located. Spawning will be observed and egg collections should yield measurable success evaluations. Emigration of post-spawned tagged shad will be evaluated and downstream passage routes as well as expediency of passage at Vernon Project will be identified. Passage survival through the project will be assessed with the use of motion sensor~~/temperature~~ radio tags.

## Page 213, first paragraph:

Radio receivers will be Lotek Wireless, Inc. (Lotek) SRX_400 and SRX_600 units and a Digital Spectrum Processor data logging unit. Radio transmitters will be coded VHF transmitters supplied by Lotek, Newmarket, Ontario, Canada. The radio tags (model number MCFT-3EM) are digitally encoded and will transmit signals on two to four frequencies (channels) within the 150- to 151-megahertz band. Each radio tag will contain a unique pulse train to allow for individual fish identification (codes). Each cylindrical radio tag measures 11 mm in diameter, 49 mm in length, weighs 4.3 grams in water, and has a 455-mm-long whip antenna. The radio tags will propagate signals at varying rates between 2.0 and 3.0 seconds and will have a minimum battery life of approximately 206 days. Each tag will incorporate motion ~~and temperature~~ sensing capabilities. If a specimen becomes stationary or regurgitates its transmitter, detection of that signal will verify via pulse code that the transmitter is stationary. ~~In addition, every detection event of radio-tagged shad will record its temperature within the data log. Temperature and m~~Motion data are transmitted via pulse codes, thus, can only be discerned during detection of the radio signals.

## Page 214, last paragraph:

If analyses of the USGS 2012 data suggest a greater sample size may be needed to gain meaningful information, sample sizes for PIT and radio/PIT tagged shad (and the number of receivers needed to accommodate larger sample sizes to minimize signal collisions) will be increased to a level that to ensure collection of significant data.

## Page 215 - 216:

**ANALYSIS**

After all telemetry data collected by USGS during its 2012 study that is pertinent to the Vernon Project are made available to TransCanada, the data will be ~~compiled, reduced, sorted by individual, and analyzed~~reviewed to provide indications of proper placement of receivers and selected radio transmitter frequencies.~~, to the extent the data allow, a concise representation of migrating shad movement and behavior in the tailrace area of Vernon dam. Depending on the quality of the data, migration routes, residency times, ladder efficiencies, and effects of project operations on passage efficiency will be ascertained. If data are conducive to determining downstream passage of post-spawned shad, they will be analyzed to discern success of downstream passage as well.~~

For this study, all radio transmitters will have a unique frequency or code, thus allowing discrimination by individual. ~~In addition, temperature sensors incorporated within the transmitters will allow the fish's ambient temperature to be recorded when individual is being detected.~~ The motion sensing ability of the transmitters will be an instantaneous measure of the transmitter's mobility status (i.e., ~~in the fish or not).~~active or sedentary). All radio-telemetry data from each monitor station will be combined, compiled, reduced, and sorted by individual shad. Pertinent data made available from the related FirstLight study will be incorporated into the TransCanada dataset associated with this study.

Resultant refined data will illustrate individual shad movement ~~and ambient water temperature~~ about Vernon dam tailwater areas and indicate holding areas, if any, and timing of upstream passage. PIT readers within the fish ladder will supply information as to the efficiency of the ladder to pass shad. Locations of each radio-tagged shad will be presented spatial-temporally in tabular and graphic form, both in and around Vernon dam and upstream in the Vernon impoundment and Bellows Falls downstream reach. Project operational data will be presented and compared to shad movement to determine effects on shad movement and passage at the dam. The spawning location of each fish within the study area, if applicable, will be identified. Water temperature data recorded ~~by the radio tags and~~ by data loggers set for the Water Quality Study (Study 6) will be presented in context with shad location and project operations.

Congregation and spawning areas of radio-tagged American shad will be compiled and presented graphically on maps and possibly with aerial photography. Quantification and qualification of shad egg collections will be presented in tabular form. Density of eggs collected per sample will be determined by enumerating a sub-sample and relating that to the volume of water filtered. Spawning activity and fervor will be described subjectively and relative to other spawning activities observed. Factors affecting egg collection (i.e., water turbulence, high velocities, shallow depth) will be noted.

Emigration timing, residence time, passage route selection, and survival of passage for each post-spawned shad will be presented in tabular form. Shad presence and timing of passage will be related

to project operations data to characterize what project effects, if any, on downstream passage can be discerned. ~~Temperature sensors will indicate water temperatures each tagged shad occupy as they migrate about the forebay area prior to downstream passage.~~ Motion sensors will immediately identify the status of each transmitter, whether it is mobile or stationary after passage. Attempts will be made to discern whether the fish regurgitated the tag or whether it suffered mortality after downstream passage.

## Page 217-218:

**SCHEDULE**

~~Analyses~~ Review of all data from USGS 2012 shad migration study related to the Vernon Project is expected to be completed by the end of ~~2013~~2014, prior to the first year of this study.

Field work for this study will occur in the ~~first~~ second study year (2015~~4~~). American shad collection and tagging will likely commence at the Holyoke fishlift from mid-April to early May, depending on water temperature. All specimens should be tagged and released by early June. Shad will be monitored at Vernon dam and tailwaters, and once most specimens have passed upstream and arrived at spawning sites, as determined by monitoring, by mid- to late-June, field observations and egg collections will commence. The field observations will likely end in early to mid–July when specimens should begin to emigrate. Most post-spawned shad can be expected to pass downstream of Vernon dam by late July. Data compilation, reduction, analyses, and report preparation will be conducted after the end of the field season.

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## Study 23 – Fish Impingement, Entrainment and Survival Study

This study relies in part on the results of associated studies including fish community data collected during the Fish Assemblage Study (Study 10). Fish community data from that study will be used to identify the target species list that will be assessed to identify potential impingement and entrainment effects. In addition, findings from the two American shad studies at the Vernon Project (Studies 21 and 22) and from the two American eel downstream assessments (Studies 19 and 20) may provide useful insight into the determination of survival for these diadromous fish species. Stakeholders and TransCanada agreed at the technical meeting to adjust the schedule for this study and TransCanada proposes the following modification to the RSP.

## Page 233:

**SCHEDULE**

This desktop assessment of impingement, entrainment, and turbine survival will be conducted during the second study year in the ~~spring~~ late summer and fall of 2015. It will rely on results from the Fish Assemblage Study (Study 10), which will be conducted during study year ~~1~~ 2 and will allow for proper identification of the target fish species. In addition, findings from the associated studies referenced above (Studies 19, 20, 21, and 22) also to be conducted in study year 2 may provide useful insight into the determination of survival for diadromous fish species.

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| | |
|---|---|
| **From:** | John Ragonese |
| **To:** | "andrew.gast-bray@lebcity.com"; "rstira@gdfsuezna.com"; "brett.battaglia@hdrinc.com"; "bhanson@normandeau.com"; "cfoss@nhaudubon.org"; Cleveland Kapala; "dclem@lymeproperties.com"; "ddeen@ctriver.org"; "dmason@normandeau.com"; "dhjorth@louisberger.com"; "droyer@normandeau.com"; "dtrested@normandeau.com"; "ethan@biodrawversity.com"; "gabe.gries@wildlife.nh.gov"; "gregg.comstock@des.nh.gov"; "jeff.crocker@state.vt.us"; Jennifer Griffin; "McClammer@aol.com"; "john.howard@gdfsuezna.com"; "john_warner@fws.gov"; "kkennedy@tnc.org"; "blackrivercleanup@yahoo.com"; "kenneth.hogan@ferc.gov"; "ken_sprankle@fws.gov"; "lael.will@state.vt.us"; "li@eurekasw.com"; "ldewald@entergy.com"; "mark.goodwin@lebcity.com"; "mwamser@gomezandsullivan.com"; "mary.mccann@hdrinc.com"; "mfischer@normandeau.com"; "matthew.carpenter@wildlife.nh.gov"; "melissa_grader@fws.gov"; "michael.sears@hdrinc.com"; "michael.chelminski@stantec.com"; "nicholas.Ettema@ferc.gov"; "nscormen@gmail.com"; "nsims@honors.umass.edu"; "owen.david@des.nh.gov"; "rsimmons@normandeau.com"; "Robert.Mitchell@hdrinc.com"; "rod.wentworth@state.vt.us"; "sara.cavin@uvlt.org"; "smaxwell@normandeau.com"; "shelley.hadfield@lebcity.com"; "steve.arnold@devinetarbell.com"; "seggers@normandeau.com"; "wendy@vermontjewel.com"; "tom.christopher@comcast.net"; "tpayne@normandeau.com"; Julia Wood; "tsullivan@gomezandsullivan.com"; "johnbenn@windhamregional.org"; DeWald, Lynn (ldewald@entergy.com); "sskibniowski@entergy.com"; "afisk@ctriver.org"; Erin O"Dea; "eric.davis@state.vt.us" |
| **Subject:** | RE: POST 12-18-13 DISCUSSION VERSION TC Study Plan Revisionsdue to VY shutdown |
| **Date:** | Wednesday, December 18, 2013 4:38:00 PM |
| **Attachments:** | Study Plan Modifications due to VY 12-18-13.docx |

Thanks to those of you who participated in today's call. Here is the final version of our proposed changes and look I forward to your emailed responses. As discussed SP #6, SP#13, SP#21 and SP#23 were fine as proposed. We made modifications to SP #18 to address the timing on deployment of fish trap passes.

I TOTALLY mis-spoke on my planned date for submitting the final version. I completely missed the fact that Christmas is NEXT week not the week after. And so I wanted to get this out to you ASAP in hopes of receiving the anticipated emails from those of you on the call in order to include and respond to them in my filing. Because of my apparent lapse, if there is any way for those emails to arrive in the next day or two, I might actually be able to file the final with FERC as early as THIS Friday, rather than during my Christmas break.

Thanks for understanding.

John

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**From:** John Ragonese
**Sent:** Monday, December 16, 2013 1:52 PM
**To:** 'andrew.gast-bray@lebcity.com'; 'rstira@gdfsuezna.com'; 'brett.battaglia@hdrinc.com'; 'bhanson@normandeau.com'; 'cfoss@nhaudubon.org'; Cleveland Kapala; 'dclem@lymeproperties.com'; 'ddeen@ctriver.org'; 'dmason@normandeau.com'; 'dhjorth@louisberger.com'; 'droyer@normandeau.com'; 'dtrested@normandeau.com'; 'ethan@biodrawversity.com'; 'gabe.gries@wildlife.nh.gov'; 'gregg.comstock@des.nh.gov'; 'jeff.crocker@state.vt.us'; Jennifer Griffin; 'McClammer@aol.com'; 'john.howard@gdfsuezna.com'; John Ragonese; 'john_warner@fws.gov'; 'kkennedy@tnc.org'; 'blackrivercleanup@yahoo.com'; 'kenneth.hogan@ferc.gov'; 'ken_sprankle@fws.gov'; 'lael.will@state.vt.us'; 'li@eurekasw.com'; 'ldewald@entergy.com'; 'mark.goodwin@lebcity.com'; 'mwamser@gomezandsullivan.com'; 'mary.mccann@hdrinc.com'; 'mfischer@normandeau.com'; 'matthew.carpenter@wildlife.nh.gov'; 'melissa_grader@fws.gov'; 'michael.sears@hdrinc.com'; 'michael.chelminski@stantec.com'; 'nicholas.Ettema@ferc.gov'; 'nscormen@gmail.com'; 'nsims@honors.umass.edu'; 'owen.david@des.nh.gov'; 'rsimmons@normandeau.com'; 'Robert.Mitchell@hdrinc.com'; 'rod.wentworth@state.vt.us'; 'sara.cavin@uvlt.org'; 'smaxwell@normandeau.com'; 'shelley.hadfield@lebcity.com'; 'steve.arnold@devinetarbell.com'; 'seggers@normandeau.com'; 'wendy@vermontjewel.com'; 'tom.christopher@comcast.net'; 'tpayne@normandeau.com'; Julia Wood; 'tsullivan@gomezandsullivan.com'; 'johnbenn@windhamregional.org'; DeWald, Lynn (ldewald@entergy.com); 'sskibniowski@entergy.com'; 'afisk@ctriver.org'; Erin O'Dea; 'eric.davis@state.vt.us'
**Subject:** TC Study Plan Revisions based upon VY shutdown effect on scope and schedule.

To TC Relicensing Aquatics Working Group and November 26, 2013 Study Plan meeting stakeholder attendees:

As discussed at the November 26th meeting, TransCanada proposes several revisions to its previously filed Study Plan based upon discussions concerning appropriate baseline study conditions, study schedule and scope for those studies directly related to Vermont Yankee's decision to shut down and effectively eliminate a significant thermal discharge into the Connecticut River above Vernon Dam. Below and attached, please find an introduction to our proposed changes as well as specific study plan language changes – ADDED text is highlighted; removed text is strike-through and highlighted.

We are seeking comments from stakeholders regarding these changes. Please note we did not specify these changes but discussed them with the participants including relevant agency staff on November 26, 2013. We will hold a conference call on Wednesday December 18th to discuss these changes and record any concerns or proposed suggestions. Conference Call info is shown below. Ultimately we would like to file revised study plans for the subject studies (including a track changes version) with the FERC prior to Christmas> We would ideally like to include concurring statements (sent to TC by email if possible.) This would not preclude you from filing comments, but we hope that our changes below reflect modest agreeable revisions such that we can move this process along as quickly as possible.

**TC Study Plan Revisions Conference Call:**
**Wednesday January 18, 2013 1:00 PM**
**Call-in Number: 800-914-3396**
**Passcode: 742925**

Thank you for your consideration on this matter.

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## Introduction

*FERC held a technical meeting among TransCanada and stakeholders involved in the relicensing of the Wilder, Bellows Falls and Vernon projects. The meeting was held on November 26, 2013 in Brattleboro, VT for the purpose of discussing impacts of the planned Vermont Yankee (VY) closure on December 29, 2014 on the schedule and scope of TransCanada's aquatics-related relicensing studies. Stakeholders and TransCanada agreed at the meeting that some studies planned for 2014 should be delayed until 2015 after VY's closure to ensure that study baselines for evaluation of project effects reflect the baseline environmental conditions expected in the future.*

*At the meeting, TransCanada committed to consult with stakeholders and file an amended study plan in December, 2013 for five of the studies (Studies 6, 13, 18, 21 and 23). On December 13, 2013 FERC issued an Interim Schedule for Study Plan Determination and required TransCanada to file the amended study plans by December 31, 2013. FERC specified that amended study plans should include proof of consultation with stakeholders. In the event TransCanada does not adopt a stakeholder recommendation, the amended study plan should also include TransCanada's reasons based on project-specific information. General study schedule changes as agreed at the meeting are indicated in the table below.*

| Study | Summary of Stakeholder Recommendations |
|---|---|
| 6 -- Water Quality Monitoring and Continuous Temperature Monitoring | Initiate study in 2015. TransCanada will propose minor modifications to study; consult with agencies and file an amended study plan by December 31, 2013. |
| 7 -- Aquatic Habitat Mapping | No Change |
| 8 -- Channel Morphology and Benthic Habitat Study | No Change |
| 9 -- Instream Flow Study | No Change |
| 10 -- Fish Assemblage Study | Initiate study in 2015 |
| 11 -- American Eel Survey | Initiate study in 2015 |
| 12 -- Tessellated Darter Survey | Initiate study in 2015 |
| 13 -- Tributary and Backwater Area Fish Access and Habitats Study | Initiate study in 2014. TransCanada will propose minor modifications to study; consult with agencies and file an amended study plan by December 31, 2013. |
| 14 -- Resident Fish Spawning in Impoundments Study | Initiate study in 2015 |
| 15 -- Resident Fish Spawning in Riverine Sections Study | Initiate study in 2015 |
| 16 -- Sea Lamprey Spawning Assessment | Initiate study in 2015 |
| 17 -- Upstream Passage of Riverine Fish Species Assessment | Initiate study in 2015 |
| 18 -- American Eel Upstream Passage Assessment | Initiate study in 2015. TransCanada will propose minor modifications to study; consult with agencies and file an amended study plan by December 31, 2013. |
| 19 -- American Eel Downstream Passage Assessment | Initiate study in 2015 |
| 20 -- American Eel Downstream Migration Timing Assessment | Initiate study in 2015 |
| 21 -- American Shad Telemetry Study – Vernon | Initiate study in 2015. TransCanada will propose minor modifications to study; consult with agencies and file an amended study plan by December 31, 2013. |
| 22 -- Downstream Migration of Juvenile American Shad - Vernon | Initiate study in 2015 |
| 23 -- Fish Impingement, Entrainment, and Survival Study | Initiate study in 2015 |
| 24 - Dwarf Wedgemussel (Alasmidonta heterodon) and Co-Occurring Mussel Study | No Change |
| 25 -- Dragonfly and Damselfly Inventory and Assessment | Initiate study in 2015 |
| New -- Vernon Hydroacoustic Study | This is a requested study modification for multiple studies, and is not proposed by TransCanada. If this study modification is approved in the study plan determination, requesters suggest it be initiated in 2015. |

*As discussed at the meeting, the Revised Study Plan (RSP, filed August 8, 2013) requires additional modifications to some studies to account for the post-VY baseline and to eliminate study aspects that are no longer needed. For those studies TransCanada's proposed RSP modifications are detailed below.*

## Proposed Revisions to Study Plans - December 2013

*TransCanada's proposed RSP revisions are detailed below. All additions and deletions are highlighted, deletions also include a strikethrough. .*

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## Study 6 – Water Quality Monitoring Study

*Stakeholders and TransCanada agreed that the Water Quality Monitoring Study should be delayed until 2015. It was also proposed and following a 10-minute caucus, stakeholders indicated agreement that additional transect temperature monitoring at station V-01 beyond the planned 10-day low flow period would not be necessary with the closure of Vermont Yankee in 2014. Therefore, TransCanada proposes to modify the RSP as follows:*

### Page 68, first paragraph:

Continuous water temperature monitoring at 15-minute intervals will be conducted at the mouths of the following 10 major tributaries to the Connecticut River: Waits, Ompompanoosuc, Mascoma, White, Sugar, Black, Williams, Cold, Saxtons, and West rivers. Monitoring sites will be located such that the data are representative of the water temperature of the tributary inflow to the Connecticut River, but the exact locations will be located in the field as determined by access and the ability to capture representative water temperature of the tributary inflow. Continuous water temperature monitoring will also occur at the 16 mainstem Connecticut River sites ~~and at a transect in the Vernon forebay area~~. In addition, this study will include continuous water temperature monitoring at transects at the monitoring locations within the impoundments during the 10-day, low-flow period.

### Page 68, third and fourth paragraphs:

From the first week of April (conditions permitting) through November 15 (conditions permitting), tributary data loggers will continuously monitor water temperature only. During this same period, continuous monitoring of water temperature will occur at the 16 mainstem water quality stations ~~and at the Vernon Project forebay~~. At each of the four datasonde monitoring locations above or in the three impoundments, at least 10 days of data will be collected at 15-minute increments during a period of low flow (<3 x 7Q10) and high temperatures (preferably over 23$^{o}$C) between June 1 and September 30.

At the datasonde monitoring locations in the impoundments during the 10-day, low-flow, and high-temperature period, transects will be established for additional water temperature data collection. These transects will consist of three stations (including the mid-channel, long-term datasonde) perpendicular to the flow with the water temperature data loggers at depths of 1 meter, mid-depth, and 1 meter from the

bottom recording at least 10 days of data at 15-minute intervals. ~~In addition, a transect will be established at the Vernon Project forebay with up to five stations with water temperature data loggers set at depths of 1 meter below the water surface, mid-depth, and 1 meter from the bottom to continuously record data from April 1 through November 15, conditions permitting.~~

Page 71, last two entries in Table 6-2:

| Task | Locations | Description | Sampling Frequency | Start Date | End Date |
|---|---|---|---|---|---|
| Water temperature continuous transect monitoring | W-04, W-03, W-02, W-01, BF-04, BF-03, BF-02, BF-01, V-04, V-03, ~~and~~ V-02 and V-01 | Monitoring of temperature via deployed data logger with automatic logging. Measurements taken at three stations (including the mid-channel long-term datasonde) perpendicular to the flow. At each station a data logger will be placed at 1 meter below the surface, mid-depth, and 1 meter above the bottom at the three transect locations | 15 min. | A 10-day, low-flow period between June 1 and Sept. 30 | NA |
| ~~Water temperature continuous transect monitoring at Vernon forebay~~ | ~~V-01~~ | ~~Monitoring of temperature via deployed data loggers. Measurements taken at the surface, mid-depth, and near-bottom at three to five transect locations~~ | ~~15 min.~~ | ~~April 1 (or as soon thereafter as safe to deploy units)~~ | ~~Nov. 15 (unless unsafe conditions are expected to preclude data collection)~~ |

## Page 74:

**SCHEDULE**

Water quality sampling specific to this study will occur in the ~~first~~ second study year (201~~4~~5). The study will commence the first week in April or as soon as safe to deploy temperature monitors, and will continue through November 15 or sooner if it becomes unsafe to collect additional data. The exact start and end dates will depend on safe conditions for unit deployment and retrieval. Schedules for water quality monitoring associated with other studies will be as described in those study plans.

## Study 13 – Tributary and Backwater Area Fish Access and Habitats Study

*At the technical meeting stakeholders reiterated their request to obtain water quality data (DO, pH, conductivity and turbidity) in addition to temperature at the study's selected sites within the Vernon project-affected area after Vermont Yankee shuts down.*

## Page 148, first full paragraph:

During the study year (2014), the selected sites will be studied further. Water-level recorders will be

placed in a random subset of applicable backwaters and tributary areas and will collect hourly depth changes and 15-minute water temperature data. Additional water quality data will be collected (temperature, DO, pH, conductivity, and turbidity) at the subset of sites ultimately selected for additional evaluation in this study with those sites based on the results of Study 7 and in consultation with the aquatics working group. Water quality data as described above will also be collected in 2015 at those selected sites within areas previously affected by the Vermont Yankee thermal discharge.

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## Study 18 – American Eel Upstream Passage

*TransCanada originally proposed to conduct the American Eel Upstream Passage Study in a single study year (2014) as described in the Proposed Study Plan (PSP, filed April 16, 2013) Methods section on pp. 126-127, and in the Schedule section on page 128. Stakeholders commented on the PSP during the study plan meetings, and recommended conducting the study over two study years, with systematic surveys conducted in year one and temporary eel trap devices installed in year two at appropriate locations based upon suitable eel concentrations detected in the first study year, and after consultation with the working group. Although TransCanada and its consultant did not feel that a two-year study was needed to accomplish those tasks, the Updated Proposed Study Plan (filed on July 8, 2013) and the RSP filed on August 8, 2013 was modified by incorporating these tasks in successive 2014 and 2015 study seasons. The RSP reflect those changes in the Study Area and Study Sites section on page 183; in the Methods section on pp. 184-185; and in the Schedule section on page 186.*

*At the technical meeting stakeholders and TransCanada agreed that this study should be delayed until 2015 after the Vermont Yankee closure. Without further revision, the study plan schedule implies that the second task involving setting of eel traps would presumably occur the following year in 2016. TransCanada proposes to revise the study plan to conduct both systematic studies and eel traps in a single year. It will have personnel and resources available to immediately install traps, typically not difficult or complicated. We will be able to identify locations and immediately place eel traps at those locations. This will ensure a better association with observed activity and collection or trapping potential. Conducting these related steps over a two-year period introduces variation in environmental conditions that could influence and distort the relationship between observations and collection. There does not seem to be any benefit to delaying the collection portion of this study plan into 2016, after filing of the application when we believe we can accommodate it within the same year as systematic surveys are performed.*

*TransCanada and its consultant discussed these issues informally with FWS staff after the technical meeting on November 26, 2013 and there seemed to be a general acceptance of this approach. Sufficient numbers of pre-fabricated eel trap passes will be available onsite. They can be deployed quickly during the systematic surveys if eels are concentrated in sufficient numbers below project dams. This approach negates the need for a second study year, provides for better study results and reflects the original study proposal. Therefore, TransCanada proposes to modify the RSP as follows.*

## Pages 183 – 184:

**STUDY AREA AND STUDY SITES**

The study area includes the tailrace and spillway locations at the Wilder, Bellows Falls, and Vernon

dams and the Bellows Falls bypassed reach. During the first year of study, systematic surveys will be conducted at each site to document the presence and relative abundance of eels. Surveys will be conducted in the spillway areas, especially where there is significant spill or leakage flow where eels may attempt to climb. Visual searches and eel pot trapping will also be conducted around the fish ladders and in the Bellows Falls bypassed reach ~~during the first year of study~~. If needed ~~during the second year of study~~, temporary eel trap passes will be installed in areas downstream of project spillways, fish ladders, and/or bypassed reaches where concentrations of eels were identified during systematic surveys.

**METHODS**

**Systematic Surveys ~~(Year 1)~~**

~~During the first year of study, v~~Visual surveys will be conducted at night, once per week, downstream of each dam on foot (wading) or from a boat from May 1 through October 15 (or when water temperature exceeds 50$^{o}$F). Visual surveys will be done in areas where eels are likely to congregate below each dam, such as spillways, places where there is significant leakage or overflow points along the dams, the Bellow Falls bypassed reach, and in areas near the upstream fish ladders. Data collected will include location (GPS coordinates), observation of eels (presence, absence, numbers, estimated sizes), time and date of observation, field notes on weather conditions, and moon phase. Other data that will be recorded include notes on project operations during sampling such as spill gates that may be open and/or spill conditions during high flows…

**Temporary/Portable Eel Trap Passes ~~(Year 2)~~**

Should adequate concentrations of eels be identified during the systematic surveys ~~conducted during the first year of study~~, temporary eel trap passes will be installed quickly at those locations and operated at each of the three projects during the ~~second~~ first year of study, concurrently with the systematic surveys that will continue. If concentrations of eels are not located due to low abundance below a project, then eel trap passes will not be fished at that site. TransCanada will develop a communication and consultation protocol with the agencies and aquatics working group that will enable periodic and updated information on surveys and observations reasonably necessary prior to the installation of any temporary eel trap passes. ~~To review results from the year 1 systematic surveys. During that consultation, TransCanada will seek to reach agreement on appropriate locations for installation of eel trap passes during year 2.~~

## Page 185, second full paragraph:

~~One of the temporary eel trap passes may be installed in the lower sections of fishways supplied with minimal attraction flow (0.5 to 1.0 cfs); however, this will only occur if the fishway is dewatered. In another study, Upstream Passage of Riverine Fish Species Assessment (Study 17), the three fish ladders will be operated during the open water period. Study 17 is planned for year 1, which would not conflict with eel trap pass placement in the fish ladders during year 2.~~

Video cameras will be placed in the fish ladders for Study 17 – Upstream Passage of Riverine Fish Species Assessment also delayed until 2015, and thus concurrent with this study. These cameras will record round-the-clock during the entire open water season and, once video data is analyzed, will provide sufficient information on eels attempting to use the ladders.

## Page 186:

**SCHEDULE**

Systematic surveys will begin at all three dams during the ~~first~~ second study year (201~~4~~5) on May 1 and continue through October 15, including weekly eel pot trapping and visual night surveys. Following periodic consultation with the fishery agencies and aquatics working group regarding results of the systematic surveys throughout the survey period, temporary eel trap passes will be installed ~~during the second study year (2015)~~ below the dams if concentrations of eels are found ~~during the first study year~~. ~~Two e~~Eel trap passes will be set in locations where eels were found congregating throughout the~~by~~ May 1-October 15 period.~~, and traps will be fished through October 15.~~ The field effort will cover 22 weeks of sampling ~~during both years 1 and 2~~, with the traps being fished every 2 to 3 days during that time period. The study report will be prepared after all field work and data analysis is completed.

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## Study 21 – American Shad Telemetry Study – Vernon

*With the closure of VY, it is no longer appropriate to rely on the USGS data collected in 2011 and/or 2012 for determination of timing of the shad run in a post-VY baseline. However, the USGS data may still be helpful to this study in other ways as described in the study plan's Methods section. Therefore, TransCanada proposes to modify the RSP to include a limited review and evaluation of the USGS data to support this study's design and methodology. In addition, temperature tags are no longer needed since their purpose was to record water temperature as shad migrate past Vermont Yankee's thermal discharge, and proposed RSP modifications relative to temperature tags are also included below.*

### Page 208, last paragraph:

The study conducted in 2012 was a broad-scale monitoring of tagged shad that included monitoring in the tailwaters of the Vernon Project with near-field monitoring of the fish ladder entrance. Via PIT tags, the efficiency of the ladder to pass shad upstream was observed. Detection of post-spawned tagged shad (both PIT and radio) and perhaps downstream passage at Vernon may have been recorded. Although there is valuable information from the 2012 study, it has yet to be analyzed. ~~Therefore, a~~As a component of this study, a limited review of the 2012 data will be performed in ~~2013~~2014~~, pending timely receipt of the data. Those data will~~ to glean any information which may be used to fine tune the design of this study, including potential changes in sample size, in consultation with the aquatics working group as described in the methods section below.

### Page 209-210:

**METHODS *(first two paragraphs only)***

It is expected that once the 2012 data have been ~~analyzed~~ evaluated~~in 2013~~, those data may contribute to existing information ~~to indicate timing of the shad run from Turners Falls to the Vernon Project,~~ on optimal placement of receivers and ~~residency of tagged shad at the Vernon Project prior to passing upstream, efficiency of shad passage through the fish ladder, and perhaps numbers of post-spawned shad returning downstream through the Vernon Project. Another variable the 2012 study may assist with is~~ selection of radio frequencies for this study. ~~Analysis~~ Review of those data may provide insight into which frequencies may be noisier, thus avoided, in the vicinity of the project. ~~Timing of migration through the Turners Falls impoundment and residence time of tagged shad in the Vernon tailwaters during 2012 will help determine sample size for this study.~~ Results of the ~~analysis~~

review of the 2012 data will be discussed with the aquatics working group and critical modifications to the field work described below for the upstream passage assessment in this study will be discussed based upon this consultation.

TransCanada will monitor the timing of shad upstream migration through the upper portion of the Turners Falls impoundment as the 2012 study did, and monitor shad behavior and movement near-field to the Vernon turbine discharges and the spillway areas. This behavior will be correlated to turbine discharge regimes, and effects will be assessed. Ability of tagged shad to locate the fish ladder entrance will be assessed and related to project operations. Once in the fish ladder, efficiency of passage will be determined similarly to the 2012 study. PIT readers in the fishway, as well as one of the radio monitoring stations, will record shad passage. After passage at Vernon, timing of the shad migration as far upstream as the Bellows Falls Project will be determined. Tagged shad will be manually tracked and spawning areas located. Spawning will be observed and egg collections should yield measurable success evaluations. Emigration of post-spawned tagged shad will be evaluated and downstream passage routes as well as expediency of passage at Vernon Project will be identified. Passage survival through the project will be assessed with the use of motion sensor~~/temperature~~ radio tags.

## Page 213, first paragraph:

Radio receivers will be Lotek Wireless, Inc. (Lotek) SRX_400 and SRX_600 units and a Digital Spectrum Processor data logging unit. Radio transmitters will be coded VHF transmitters supplied by Lotek, Newmarket, Ontario, Canada. The radio tags (model number MCFT-3EM) are digitally encoded and will transmit signals on two to four frequencies (channels) within the 150- to 151-megahertz band. Each radio tag will contain a unique pulse train to allow for individual fish identification (codes). Each cylindrical radio tag measures 11 mm in diameter, 49 mm in length, weighs 4.3 grams in water, and has a 455-mm-long whip antenna. The radio tags will propagate signals at varying rates between 2.0 and 3.0 seconds and will have a minimum battery life of approximately 206 days. Each tag will incorporate motion ~~and temperature~~ sensing capabilities. If a specimen becomes stationary or regurgitates its transmitter, detection of that signal will verify via pulse code that the transmitter is stationary. ~~In addition, every detection event of radio-tagged shad will record its temperature within the data log. Temperature and m~~Motion data are transmitted via pulse codes, thus, can only be discerned during detection of the radio signals.

## Page 214, last paragraph:

If analyses of the USGS 2012 data suggest a greater sample size may be needed to gain meaningful information, sample sizes for PIT and radio/PIT tagged shad (and the number of receivers needed to accommodate larger sample sizes to minimize signal collisions) will be increased to a level that to ensure collection of significant data.

## Page 215 - 216:

**ANALYSIS**

After all telemetry data collected by USGS during its 2012 study that is pertinent to the Vernon Project are made available to TransCanada, the data will be ~~compiled, reduced, sorted by individual, and analyzed~~reviewed to provide indications of proper placement of receivers and selected radio

transmitter frequencies., to the extent the data allow, a concise representation of migrating shad ~~movement and behavior in the tailrace area of Vernon dam. Depending on the quality of the data, migration routes, residency times, ladder efficiencies, and effects of project operations on passage efficiency will be ascertained. If data are conducive to determining downstream passage of post-spawned shad, they will be analyzed to discern success of downstream passage as well.~~

For this study, all radio transmitters will have a unique frequency or code, thus allowing discrimination by individual. ~~In addition, temperature sensors incorporated within the transmitters will allow the fish's ambient temperature to be recorded when individual is being detected.~~ The motion sensing ability of the transmitters will be an instantaneous measure of the transmitter's mobility status (i.e., ~~in the fish or not).~~active or sedentary). All radio-telemetry data from each monitor station will be combined, compiled, reduced, and sorted by individual shad. Pertinent data made available from the related FirstLight study will be incorporated into the TransCanada dataset associated with this study.

Resultant refined data will illustrate individual shad movement ~~and ambient water temperature~~ about Vernon dam tailwater areas and indicate holding areas, if any, and timing of upstream passage. PIT readers within the fish ladder will supply information as to the efficiency of the ladder to pass shad. Locations of each radio-tagged shad will be presented spatial-temporally in tabular and graphic form, both in and around Vernon dam and upstream in the Vernon impoundment and Bellows Falls downstream reach. Project operational data will be presented and compared to shad movement to determine effects on shad movement and passage at the dam. The spawning location of each fish within the study area, if applicable, will be identified. Water temperature data recorded ~~by the radio tags and~~ by data loggers set for the Water Quality Study (Study 6) will be presented in context with shad location and project operations.

Congregation and spawning areas of radio-tagged American shad will be compiled and presented graphically on maps and possibly with aerial photography. Quantification and qualification of shad egg collections will be presented in tabular form. Density of eggs collected per sample will be determined by enumerating a sub-sample and relating that to the volume of water filtered. Spawning activity and fervor will be described subjectively and relative to other spawning activities observed. Factors affecting egg collection (i.e., water turbulence, high velocities, shallow depth) will be noted.

Emigration timing, residence time, passage route selection, and survival of passage for each post-spawned shad will be presented in tabular form. Shad presence and timing of passage will be related to project operations data to characterize what project effects, if any, on downstream passage can be discerned. ~~Temperature sensors will indicate water temperatures each tagged shad occupy as they migrate about the forebay area prior to downstream passage.~~ Motion sensors will immediately identify the status of each transmitter, whether it is mobile or stationary after passage. Attempts will be made to discern whether the fish regurgitated the tag or whether it suffered mortality after downstream passage.

## Page 217-218:

**SCHEDULE**

~~Analyses~~ Review of all data from USGS 2012 shad migration study related to the Vernon Project is expected to be completed by the end of ~~2013~~2014, prior to the first year of this study.

Field work for this study will occur in the ~~first~~ second study year (2015~~4~~). American shad collection and tagging will likely commence at the Holyoke fishlift from mid-April to early May, depending on water temperature. All specimens should be tagged and released by early June. Shad will be monitored at Vernon dam and tailwaters, and once most specimens have passed upstream and arrived at spawning sites, as determined by monitoring, by mid- to late-June, field observations and egg collections will commence. The field observations will likely end in early to mid–July when specimens should begin to emigrate. Most post-spawned shad can be expected to pass downstream of Vernon dam by late July. Data compilation, reduction, analyses, and report preparation will be conducted after the end of the field season.

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## Study 23 – Fish Impingement, Entrainment and Survival Study

This study relies in part on the results of associated studies including fish community data collected during the Fish Assemblage Study (Study 10). Fish community data from that study will be used to identify the target species list that will be assessed to identify potential impingement and entrainment effects. In addition, findings from the two American shad studies at the Vernon Project (Studies 21 and 22) and from the two American eel downstream assessments (Studies 19 and 20) may provide useful insight into the determination of survival for these diadromous fish species. Stakeholders and TransCanada agreed at the technical meeting to adjust the schedule for this study and TransCanada proposes the following modification to the RSP.

### Page 233:

**SCHEDULE**

This desktop assessment of impingement, entrainment, and turbine survival will be conducted during the second study year in the ~~spring~~ late summer and fall of 2015. It will rely on results from the Fish Assemblage Study (Study 10), which will be conducted during study year ~~1~~ 2 and will allow for proper identification of the target fish species. In addition, findings from the associated studies referenced above (Studies 19, 20, 21, and 22) also to be conducted in study year 2 may provide useful insight into the determination of survival for diadromous fish species.

**John L. Ragonese, FERC License Manager**
TransCanada
4 Park Street; Concord NH 03301
CELL: 603.498.2851 (best option); 603.225.5528; FAX 603.225.3260
Email: john_ragonese@transcanada.com

# Attachment C
## 12-18-2013 Conference Call Notes

**December 18, 2013 Conference Call on Proposed Revisions to Study Plan**

Call Participants:

Jeff Crocker - Vermont Department of Environmental Conservation
Eric Davis - Vermont Department of Environmental Conservation
Rod Wentworth - Vermont Department of Fish and Wildlife
Andrew Gast-Bray – City of Lebanon
Gabe Gries – New Hampshire Fish and Game
Ken Hogan – FERC
Ken Sprankle – US Fish and Wildlife Service
Melissa Grader – US Fish and Wildlife Service
Katie Kennedy – The Nature Conservancy
David Deen – Connecticut River Watershed Association
Brian Hanson – Normandeau Associates
Maryalice Fisher – Normandeau Associates
Rick Simmons – Normandeau Associates
Drew Trested – Normandeau Associates
John Hart – Louis Berger Group
Jennifer Griffin – TransCanada
John Ragonese – TransCanada

Discussion on Revisions to Study #6:

Jeff Crocker – agrees with changes
Gabe Gries – agrees with changes
David Deen – agrees with changes
Melissa Grader/Ken Sprankle – Agrees with changes
Katie Kennedy – agrees with changes
Andrew Gast-Bray – "no issues with changes at this time"

Discussion on Revisions to Study #13:

David Deen – agrees with changes
Gabe Gries – agrees with changes
Jeff Crocker – agrees with changes
Katie Kennedy – agrees with changes
Andrew Gast-Bray – agrees with changes
Melissa Grader/Ken Sprankle – agrees with changes

Discussion on Revisions to Study #18:

Ken Sprankle – questioned camera monitoring in the fishway. TC provided clarification that this was mentioned in Study #18 but is an element of Study #17. No mention of installing floating traps at the base of the fishway. TC responded that the fishway would likely be operational during the same study period in association with Study #17 and because the fishway does not have leakage there is no attraction for eels to congregate at its base. TC will install floating traps as needed based upon observations of leakage and eels if this technique makes the most sense.
Ken Hogan- would like to see "quickly" as stated in last paragraph on Page 6 better defined or quantified. TC has revised the Study Plan to address this comment.
Gabe Gries – generally fine with changes
Katie Kennedy – generally fine with changes
Melissa Grader – generally fine with changes but due to changing from a 2-year study to a 1-year study, FWS would like to see language in the SP that identifies the need for a second study season

if environmental conditions out of our control prevent an adequate or successful study or if inadequate data is collected.
David Deen – generally agrees with changes with the same reservation as indicated by Melissa Grader (FWS)
John Ragonese - TC disagreed with the need to make such a statement specifically in this study due to shifting survey component to 2015. TC indicated the survey component was initially a 1-year survey and will remain so under the revised plan. TC noted that the risk of insufficient collections and the annual variability will actually be reduced as a result of the revisions. TC further stated that anomalous environmental factors can be identified, discussed and if needed, result in repeating the study under current ILP process thus not requiring specific language.

Discussion on Revisions to Study #21:

Eric Davis – would be nice to have the temperature tag data.
FWS (Melissa Grader or Ken Sprankle) – temperature [radio]tag data would be valuable data but we acknowledge the purposes of this request was related to monitoring fish and to distinguish where fish swim in relation to the VY thermal discharge. Ok is temperature tags are eliminated.
Gabe Gries – agrees with changes
David Deen – would like to have the data but agrees with changes
Ken Sprankle - agrees with changes
Katie Kennedy – agrees with changes

Discussion on Revisions to Study #23:

None of the participants stated any concerns with the proposed changes.

# Attachment D

**Written Comments after 12-18-2013 re-distribution of proposed Study Plan Revisions**

## John Ragonese

**From:** Davis, Eric <Eric.Davis@state.vt.us>
**Sent:** Friday, December 20, 2013 11:32 AM
**To:** John Ragonese
**Cc:** Crocker, Jeff; Wentworth, Rod
**Subject:** RE: POST 12-18-13 DISCUSSION VERSION TC Study Plan Revisionsdue to VY shutdown

John, our comments are included below:

The Vermont Agency of Natural Resources (VANR) participated in a conference call on December 18, 2013 with TransCanada and stakeholders to discuss TransCanada's proposed modifications to the revised study plan deemed necessary at the November 26, 2013 stakeholder meeting.

VANR is in agreement with the modifications made by TransCanada to studies 6, 13, 21, and 23.

TransCanada is proposing changes to study 18, American Eel upstream passage, that include condensing both the systematic eel surveys and the temporary/portable eel trap passes into the same study year. The current schedule in the revised study plan calls for each task to be completed in separate study years. VANR recognizes that the modified approach may reduce variability between years, but it also increases the risk that sufficient data may not be collected during the period of study.

VANR recommends that language be included in the final study plan that both recognizes the increased risk of the modified schedule and provides an avenue for resource agencies to request additional study if agency review deems that the data collected under the condensed schedule is not sufficient to address the goal of the study.

**Eric Davis, *River Ecologist***
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802-490-6180 / eric.davis@state.vt.us
http://www.watershedmanagement.vt.gov/rivers


**From:** John Ragonese [mailto:john_ragonese@transcanada.com]
**Sent:** Wednesday, December 18, 2013 4:39 PM
**To:** andrew.gast-bray@lebcity.com; rstira@gdfsuezna.com; brett.battaglia@hdrinc.com; bhanson@normandeau.com; cfoss@nhaudubon.org; Cleveland Kapala; dclem@lymeproperties.com; ddeen@ctriver.org; dmason@normandeau.com; dhjorth@louisberger.com; droyer@normandeau.com; dtrested@normandeau.com; ethan@biodrawversity.com; gabe.gries@wildlife.nh.gov; gregg.comstock@des.nh.gov; Crocker, Jeff; Jennifer Griffin; McClammer@aol.com; john.howard@gdfsuezna.com; john_warner@fws.gov; kkennedy@tnc.org; blackrivercleanup@yahoo.com; kenneth.hogan@ferc.gov; ken_sprankle@fws.gov; Will, Lael; li@eurekasw.com; ldewald@entergy.com; mark.goodwin@lebcity.com; mwamser@gomezandsullivan.com; mary.mccann@hdrinc.com; mfischer@normandeau.com; matthew.carpenter@wildlife.nh.gov; melissa_grader@fws.gov; michael.sears@hdrinc.com;

## John Ragonese

**From:** Gries, Gabriel <Gabriel.Gries@wildlife.nh.gov>
**Sent:** Thursday, December 19, 2013 8:54 AM
**To:** John Ragonese
**Cc:** Gries, Gabriel; Carpenter, Matthew; Carol.B.Henderson@wildlife.nh.gov
**Subject:** TC Study Plan Revisions due to VY shutdown: NH Fish and Game Comments

John,

I have reviewed TransCanada's amended study plan for Studies 6, 13, 18, 21 and 23 that were revised due to the shutdown of Vermont Yankee in 2014 (final version 12-18-13). Overall, I approve of the amended study plan.

As mentioned during the conference call, there was concern that video cameras in the fishways (detailed in Study Plan 18) might not detect eels that are in the general area as undesirable flows may prohibit eels from reaching the locations where video cameras are stationed. Accordingly, I support the use of a floating eel trap/pass at these locations. Additionally, it should be made clear that if eel data collected in 2015 for Study 18 are insufficient and/or there are anomalous environmental conditions during the 2015 field season, we feel it will be necessary to repeat the study in 2016.

Have a good Christmas break,

Gabe

Gabe Gries ><{{{">
Fisheries Biologist II
Warmwater Project Leader
New Hampshire Fish & Game Department
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15 Ash Brook Court
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NH Fish and Game…*connecting you to life outdoors*
www.wildnh.com, www.facebook.com/nhfishandgame

**Did you know?** New Hampshire Fish and Game is a self-supporting agency, funded mainly by hunting and fishing license fees, federal grants and donations.

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**From:** John Ragonese [mailto:john_ragonese@transcanada.com]
**Sent:** Wednesday, December 18, 2013 4:39 PM
**To:** andrew.gast-bray@lebcity.com; rstira@gdfsuezna.com; brett.battaglia@hdrinc.com; bhanson@normandeau.com; cfoss@nhaudubon.org; Cleveland Kapala; dclem@lymeproperties.com; ddeen@ctriver.org; dmason@normandeau.com; dhjorth@louisberger.com; droyer@normandeau.com; dtrested@normandeau.com; ethan@biodrawversity.com; Gries, Gabriel; gregg.comstock@des.nh.gov; jeff.crocker@state.vt.us; Jennifer Griffin; McClammer@aol.com; john.howard@gdfsuezna.com; john_warner@fws.gov; kkennedy@tnc.org; blackrivercleanup@yahoo.com; kenneth.hogan@ferc.gov; ken_sprankle@fws.gov; lael.will@state.vt.us; li@eurekasw.com; ldewald@entergy.com; mark.goodwin@lebcity.com; mwamser@gomezandsullivan.com; mary.mccann@hdrinc.com; mfischer@normandeau.com; Carpenter, Matthew; melissa_grader@fws.gov; michael.sears@hdrinc.com; michael.chelminski@stantec.com; nicholas.Ettema@ferc.gov; nscormen@gmail.com; nsims@honors.umass.edu; owen.david@des.nh.gov;

**From:** Katie Kennedy
**To:** John Ragonese
**Subject:** RE: POST 12-18-13 DISCUSSION VERSION TC Study Plan Revisionsdue to VY shutdown
**Date:** Friday, December 20, 2013 9:55:51 AM
**Attachments:** image003.png

John – I think the proposed changes to the study plans are sufficient to account for the closure of Vermont Yankee. If I need to give you a more formal response, let me know.

Thanks,
Katie Kennedy



**Kathryn D. Mickett Kennedy**
*Applied River Scientist*
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(413) 588 1959 (Cell)

**The Nature Conservancy**
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**From:** John Ragonese [mailto:john_ragonese@transcanada.com]
**Sent:** Wednesday, December 18, 2013 4:39 PM
**To:** andrew.gast-bray@lebcity.com; rstira@gdfsuezna.com; brett.battaglia@hdrinc.com; bhanson@normandeau.com; cfoss@nhaudubon.org; Cleveland Kapala; dclem@lymeproperties.com; ddeen@ctriver.org; dmason@normandeau.com; dhjorth@louisberger.com; droyer@normandeau.com; dtrested@normandeau.com; ethan@biodrawversity.com; gabe.gries@wildlife.nh.gov; gregg.comstock@des.nh.gov; jeff.crocker@state.vt.us; Jennifer Griffin; McClammer@aol.com; john.howard@gdfsuezna.com; john_warner@fws.gov; Katie Kennedy; blackrivercleanup@yahoo.com; kenneth.hogan@ferc.gov; ken_sprankle@fws.gov; lael.will@state.vt.us; li@eurekasw.com; ldewald@entergy.com; mark.goodwin@lebcity.com; mwamser@gomezandsullivan.com; mary.mccann@hdrinc.com; mfischer@normandeau.com; matthew.carpenter@wildlife.nh.gov; melissa_grader@fws.gov; michael.sears@hdrinc.com; michael.chelminski@stantec.com; nicholas.Ettema@ferc.gov; nscormen@gmail.com; nsims@honors.umass.edu; owen.david@des.nh.gov; rsimmons@normandeau.com; Robert.Mitchell@hdrinc.com; rod.wentworth@state.vt.us; sara.cavin@uvlt.org; smaxwell@normandeau.com; shelley.hadfield@lebcity.com; steve.arnold@devinetarbell.com; seggers@normandeau.com; wendy@vermontjewel.com; tom.christopher@comcast.net; tpayne@normandeau.com; Julia Wood; tsullivan@gomezandsullivan.com; johnbenn@windhamregional.org; DeWald, Lynn (ldewald@entergy.com); sskibniowski@entergy.com; afisk@ctriver.org; Erin O'Dea; eric.davis@state.vt.us
**Subject:** RE: POST 12-18-13 DISCUSSION VERSION TC Study Plan Revisionsdue to VY shutdown

Thanks to those of you who participated in today's call. Here is the final version of our proposed changes and look I forward to your emailed responses. As discussed SP #6, SP#13, SP#21 and SP#23 were fine as proposed. We made modifications to SP #18 to address the timing on deployment of fish trap passes.

I TOTALLY mis-spoke on my planned date for submitting the final version. I completely missed the fact

12-31-2013 FWS Comments by email from Melissa Grader

Study 18 – American Eel Upstream Passage

*TransCanada originally proposed to conduct the American Eel Upstream Passage Study in a single study year (2014) as described in the Proposed Study Plan (PSP, filed April 16, 2013) Methods section on pp. 126-127, and in the Schedule section on page 128. Stakeholders commented on the PSP during the study plan meetings, and recommended conducting the study over two study years, with systematic surveys conducted in year one and temporary eel trap devices installed in year two at appropriate locations based upon suitable eel concentrations detected in the first study year, and after consultation with the working group. Although TransCanada and its consultant did not feel that a two-year study was needed to accomplish those tasks, the Updated Proposed Study Plan (filed on July 8, 2013) and the RSP filed on August 8, 2013 was modified by incorporating these tasks in successive 2014 and 2015 study seasons. The RSP reflect those changes in the Study Area and Study Sites section on page 183; in the Methods section on pp. 184-185; and in the Schedule section on page 186.*

*At the technical meeting stakeholders and TransCanada agreed that this study should be delayed until 2015 after the Vermont Yankee closure. Without further revision, the study plan schedule implies that the second task involving setting of eel traps would presumably occur the following year in 2016. TransCanada proposes to revise the study plan to conduct both systematic studies and eel traps in a single year. It will have personnel and resources available to immediately install traps, typically not difficult or complicated. We will be able to identify locations and immediately place eel traps at those locations. This will ensure a better association with observed activity and collection or trapping potential. Conducting these related steps over a two-year period introduces variation in environmental conditions that could influence and distort the relationship between observations and collection. There does not seem to be any benefit to delaying the collection portion of this study plan into 2016, after filing of the application when we believe we can accommodate it within the same year as systematic surveys are performed.*

*TransCanada and its consultant discussed these issues informally with FWS staff after the technical meeting on November 26, 2013 and there seemed to be a general acceptance of this approach. Sufficient numbers of pre-fabricated eel trap passes will be available onsite. They can be deployed quickly during the systematic surveys if eels are concentrated in sufficient numbers below project dams. This approach negates the need for a second study year, provides for better study results and reflects the original study proposal. Therefore, TransCanada proposes to modify the RSP as follows.*

# Pages 183 – 184:

**STUDY AREA AND STUDY SITES**

The study area includes the tailrace and spillway locations at the Wilder, Bellows Falls, and Vernon dams and the Bellows Falls bypassed reach. During the first year of study, systematic surveys will be conducted at each site to document the presence and relative abundance of eels. Surveys will be conducted in the spillway areas, especially where there is significant spill or leakage flow where eels may attempt to climb. Visual searches and eel pot trapping will also be conducted around the fish ladders and in the Bellows Falls bypassed reach ~~during the first year of study~~. If needed ~~during the second year of study~~, temporary eel trap passes will be installed in areas downstream of project spillways, fish ladders, and/or bypassed reaches where concentrations of eels were identified during systematic surveys.

**METHODS**

**Systematic Surveys ~~(Year 1)~~**

~~During the first year of study, v~~Visual surveys will be conducted at night, once per week, downstream of each dam on foot (wading) or from a boat from May 1 through October 15 (or when water temperature exceeds 50°F). Visual surveys will be done in areas where eels are likely to congregate below each dam, such as spillways, places where there is significant leakage or overflow points along the dams, the Bellow

**Comment [GM1]:** At the meeting, the FWS stated that it was not aware of any scientific studies indicating a temp. effect on upstream eel migration (outside of the estuary) and that, unless there was a clear temp. difference along the dam and powerhouse (which VY studies reportedly indicated there wasn't), the FWS would be OK with the study starting in 2014. However, because stakeholders did not know whether there was a temp. effect or not, and therefore it is possible there may be an effect, the FWS did not object to delaying initiation of the study until 2015.

**Comment [GM2]:** During the Dec. 18th conf. call the FWS brought up passage data from the Holyoke Project to highlight our rationale for requesting a 2 yr. study. At Holyoke, there is substantial seasonal variability both in passage location and passage numbers. The concern with trying to gather all data in one year is that this type of variability may make it difficult to identify the proper locations for deploying eel traps in order to gather sufficient data to develop recommendations/prescriptions. This potential lack of data would not be due to "anomalous" envir. Conditions, but rather to eel passage dynamics.

**Comment [GM3]:** It would be more appropriate to say that there was a general willingness to consider this approach.

Falls bypassed reach, and in areas near the upstream fish ladders. Data collected will include location (GPS coordinates), observation of eels (presence, absence, numbers, estimated sizes), time and date of observation, field notes on weather conditions, and moon phase. Other data that will be recorded include notes on project operations during sampling such as spill gates that may be open and/or spill conditions during high flows…

**Temporary/Portable Eel Trap Passes ~~(Year 2)~~**

Should adequate concentrations of eels be identified during the systematic surveys~~ conducted during the first year of study~~, temporary eel trap passes will be installed quickly at those locations and operated at each of the three projects during the~~second~~ first year of study, concurrently with the systematic surveys that will continue. If concentrations of eels are not located due to low abundance below a project, then eel trap passes will not be fished at that site. TransCanada will develop a communication and consultation protocol with the agencies and aquatics working group that will enable periodic and updated information on surveys and observations reasonably necessary prior to the installation of any temporary eel trap passes. ~~To review results from the year 1 systematic surveys. During that consultation, TransCanada will seek to reach agreement on appropriate locations for installation of eel trap passes during year 2.~~

**Comment [GM4]:** During the conf. call, TC indicated that it would attempt to deploy eel traps within 24 hrs. of observing a "concentration" of eels at a given location. This should be reflected in the plan.

# Page 185, second full paragraph:

~~One of the temporary eel trap passes may be installed in the lower sections of fishways supplied with minimal attraction flow (0.5 to 1.0 cfs); however, this will only occur if the fishway is dewatered. In another study, Upstream Passage of Riverine Fish Species Assessment (Study 17), the three fish ladders will be operated during the open water period. Study 17 is planned for year 1, which would not conflict with eel trap pass placement in the fish ladders during year 2.~~

Video cameras will be placed in the fish ladders for Study 17 – Upstream Passage of Riverine Fish Species Assessment also delayed until 2015, and thus concurrent with this study. These cameras will record round-the-clock during the entire open water season and, once video data is analyzed, will provide sufficient information on eels attempting to use the ladders.

**Comment [GM5]:** As noted by FWS on the Dec. 18th conf. call, the within-ladder video monitoring is not designed to maximize the potential to capture ladder usage by eels – as they are bottom-oriented and may fall between the screening (??). However, the FWS does not oppose analyzing the video data for whatever eel passage info it may provide.

# Page 186:

**SCHEDULE**

Systematic surveys will begin at all three dams during the ~~first~~ second study year (201~~4~~5) on May 1 and continue throughOctober 15, including weekly eel pot trapping and visual night surveys. Following periodic consultation with the fishery agencies and aquatics working group regarding results of the systematic surveys throughout the survey period, temporary eel trap passes will be installed ~~during the second study year (2015)~~ below the dams if concentrations of eels are found~~ during the first study year~~. ~~Two e~~Eel trap passes will be set in locations where eels were found congregating throughout the~~by~~ May 1-October 15 period.~~, and traps will be fished through October 15.~~ The field effort will cover 22 weeks of sampling~~ during both years 1 and 2~~, with the traps being fished every 2 to 3 days during that time period. The study report will be prepared after all field work and data analysis is completed.

**Comment [GM6]:** Based on the rationale described in Comment GM2, above, the FWS recommended on the Dec. 18th conf. call that the schedule include contingent language to allow for a second year of study, should 2015 results provide insufficient data – due not to anomalous envir. Conditions but to eel passage dynamics.

Document Content(s)