



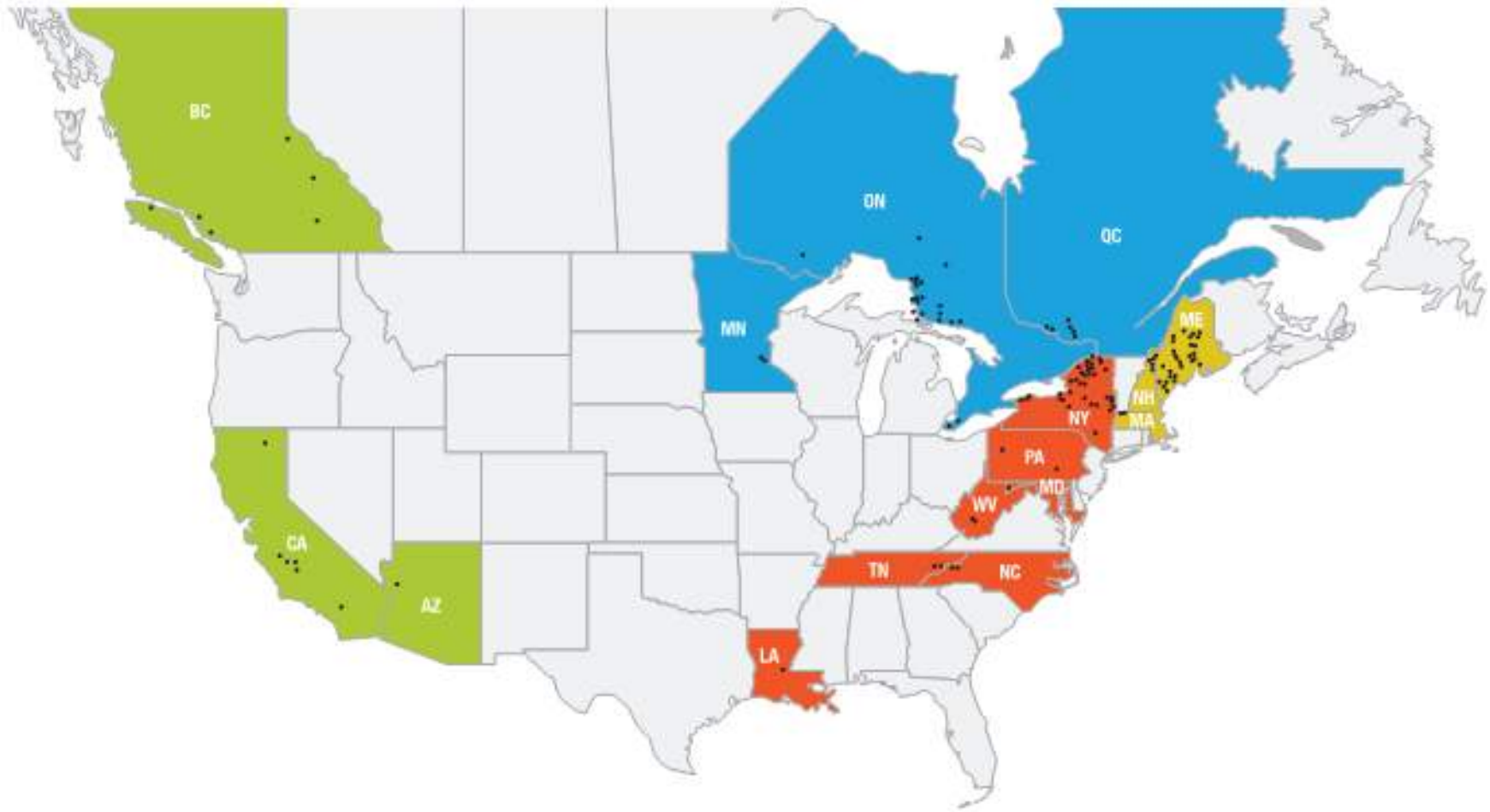
Bear Swamp Project (FERC No. 2669)

Study Consultation Meeting

February 23, 2016

- Brookfield Renewable Energy Health & Safety Policy:
We continuously strive to achieve excellence in safety performance and to be recognized as industry leaders in accident prevention.
- In case of emergency, we will dial 911
- Emergency exits and rally point outside
- Locations of emergency fire pulls
- Individuals trained in CPR
- Restrooms

Operational Regions



AREAS OF RESPONSIBILITIES & LEADERSHIP

Pacific	Central	Atlantic	Northeast
Arizona British Columbia California	Ontario Minnesota Quebec	North Atlantic New York Wallenpaupack (PA) Mid-Atlantic West Virginia Pennsylvania (with the exception of Wallenpaupack) Maryland South Atlantic Louisiana North Carolina Tennessee	Massachusetts Maine New Hampshire
Berk Gursoy <i>Vice President, Operations</i> Maria Litos <i>Director, Asset Management</i> Vacant <i>Director, Operations</i>	Jim Deluzio <i>Vice President, Operations</i> James Real <i>Director, Asset Management</i> Ralf Stefano <i>Director, Operations</i>	Tom Uncher <i>Vice President, Operations</i> Matthew Johnson <i>Director, Asset Management</i> North Atlantic Jon Elmer <i>Director, Operations</i> Mid-Atlantic John McVaigh <i>Director, Operations</i> South Atlantic David Harris <i>Director, Operations</i>	Todd Wynn <i>Vice President, Operations</i> Antonio Zarrella <i>Director, Asset Management</i> Justin Trudell <i>Director, Operations</i>



Overview, Meeting Objectives, and Agenda

Tuesday, February 23, 2016	Schedule
Introduction and Meeting Logistics	9:00 AM – 9:05 AM
Overview, Meeting Objectives, and Agenda	9:05 AM – 9:30 AM
Mesohabitat Maps	9:30 AM – 10:00 AM
Instream Flow Assessment	10:00 AM – 11:00 AM
<i>Break</i>	11:00 AM – 11:15 AM
Angler Wading Study	11:15 AM – 12:00 PM
<i>Lunch Break (Lunch on your own)</i>	12:00 PM – 1:00 PM
Whitewater Boating Flow Study	1:00 PM – 1:45 PM
Baseline Study of Freshwater Mussels	1:45 PM – 2:30 PM
<i>Break</i>	2:30 PM – 2:45 PM
State-listed Odonates Survey	2:45 PM – 3:30 PM
Discussion and Next Steps	3:30 PM – 4:00 PM

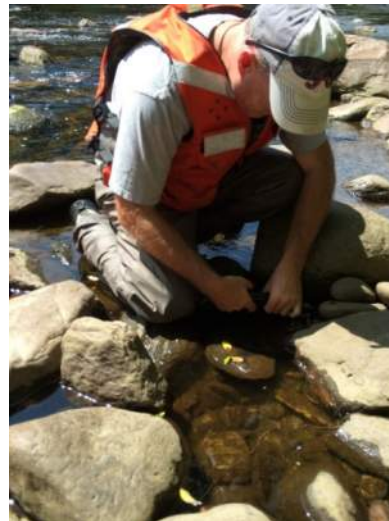


- BSPC is pursuing a new license for the Project from the Federal Energy Regulatory Commission (FERC or Commission) in accordance with FERC's Integrated Licensing Process (ILP) at 19 CFR Part 5.
- Pursuant to the ILP, BSPC developed a Proposed Study Plan (PSP) that was filed with the Commission on June 2, 2015.
- BSPC held PSP Meetings on June 29 and 30, 2015 and filed a Revised Study Plan (RSP) on September 30, 2015.
- FERC issued the Study Plan Determination (SPD) for the Project on October 30, 2015.



Activity	Schedule
Conduct Field Studies	In accordance with the SPD
File Initial Study Report (18 C.F.R. §5.15(c))	October 30, 2016
Hold Initial Study Results Meeting (18 C.F.R. §5.15(c))	November 14, 2016
File Updated Study Report (18 C.F.R. §5.15(f))	October 30, 2017
Hold Updated Study Results Meeting, if necessary (18 C.F.R. §5.15(f))	November 14, 2017
File Preliminary Licensing Proposal or Draft License Application	November 1, 2017
File Final License Application	March 31, 2018

- The SPD describes 19 approved and modified studies to be conducted in support of relicensing the Project.
- The objective of this meeting is to consult with stakeholders to resolve specific aspects identified in the SPD pertaining to the following five studies:
 1. Instream Flow Assessment
 2. State-Listed Odonates Survey
 3. Baseline Study Of Freshwater Mussel Species
 4. Whitewater Boating Flow Study
 5. Angler Wading Study





Mesohabitat Maps

- BSPC conducted mesohabitat mapping in September 2015 consistent with the methods described in Section 6 of the RSP (Aquatic Mesohabitat Assessment and Mapping) and approved in FERC's SPD
 - BSPC conducted mesohabitat mapping of the Upper Reservoir, Lower Reservoir (including the upstream extent), and the Deerfield River from Fife Brook Dam downstream to the upstream extent of the Deerfield Station No. 4 impoundment
 - The Mesohabitat Maps present information of substrate, habitat types, as well as proposed survey/study locations, formal recreation areas, popular whitewater features, and fishing spots to form a more comprehensive picture of the Deerfield River





Instream Flow Assessment

“...use the results of the aquatic mesohabitat assessment and mapping study, and consultation with stakeholders, to determine the number and location of transects for the instream flow study along the 17-mile stretch of the Deerfield River” (FERC 2015).

- BSPC has identified 10 recommended transect locations based on habitat in the Deerfield River:
 - From Fife Brook Dam downstream to the confluence with the Cold River, the 5 transects include: 2 riffle transects, 2 glide transects, and 1 pool transect
 - From the Cold River downstream to the Deerfield Station No. 4 impoundment, the 5 transects include: 2 riffle transects, 2 glide transects, and 1 pool transect





Angler Wading Study

“The angler wading study should be developed in consultation with the local fishing groups, primarily to identify common fishing locations and to recruit experienced anglers to test wading conditions.”

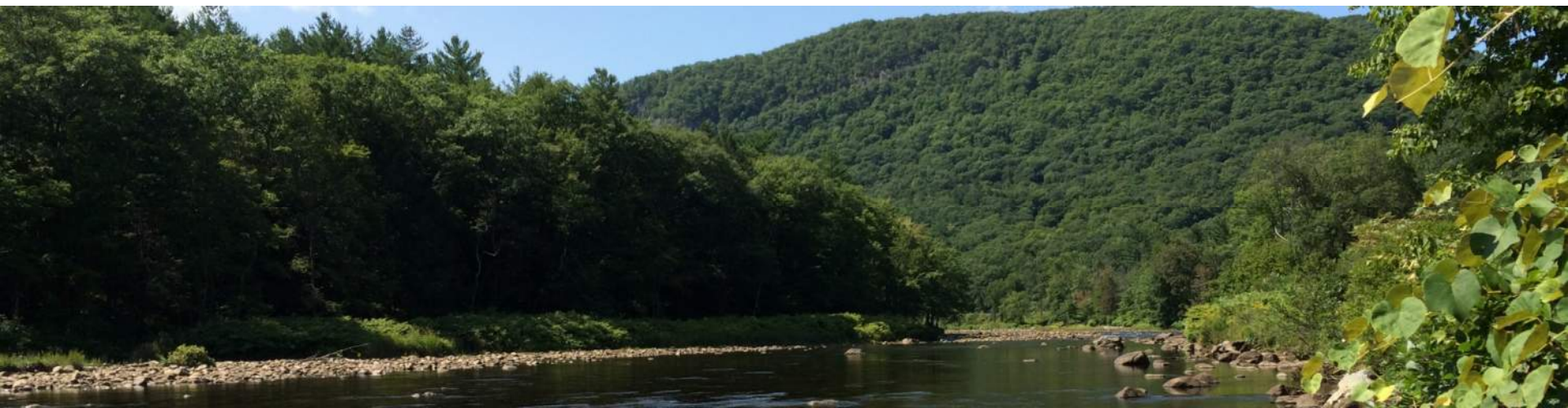
- The reach of the Deerfield between Fife Brook Dam and the Deerfield Station No. 4 is the location of many well-known fishing spots, several of which accessible from formal and informal Project recreation areas (Dowd 1993).
- There are 2 catch-and-release areas along the Deerfield River downstream from Fife Brook Dam:
 - The Upper Deerfield River Catch-and-Release Area extends from the Fife Brook Dam downstream to the Hoosac Tunnel
 - The Lower Deerfield River Catch-and-Release Area extends from Pelham Brook downstream to Mohawk Campground



Photos: Deerfield River Watershed Chapter of TU and Flyfisherman.com

Study Methods (FERC 2015)

- *The Angler Wading Study will be conducted at 4 – 5 commonly fished locations over the range of flows that are being evaluated in the Instream Flow Study (i.e., 125 cfs, 200 cfs, 275 cfs).*
- *At each location, 3 or more anglers will wade into the stream for 15-30 minutes to assess the ability to move freely about the streambed.*
- *After exiting the stream, anglers will be asked to categorize:*
 1. *The flows (e.g. high, medium, low),*
 2. *The safety of wading conditions (e.g. unsafe, challenging, safe), and*
 3. *The overall angling experience (undesirable, adequate, optimum). Anglers should also be asked if higher or lower flows would be preferred.*



Angler Wading Study Tasks and Schedule

Task	Schedule
Identify 4 – 5 Common Fishing Locations Downstream from Fife Brook Dam	February 23, 2016
TU to Identify a Pool of 6 or More Experienced Anglers to Participate in the Angler Wading Study and Provide Contact Information to BSPC	March 18, 2016
BSPC to Distribute Draft Survey Form Based on Flow, Safety, and Angler Experience to TU	March 31, 2016
TU to Provide Comments on Draft Survey Form to BSPC	April 30, 2016
Coordinate with Study Logistics with Anglers and Finalize Survey Form	May 1, 2016 – June 1, 2016
Conduct Angler Wading Study (Concurrent with Instream Flow Assessment)	June 2016 – September 2016 (Exact dates TBD and dependent on river and flow coordination conditions)

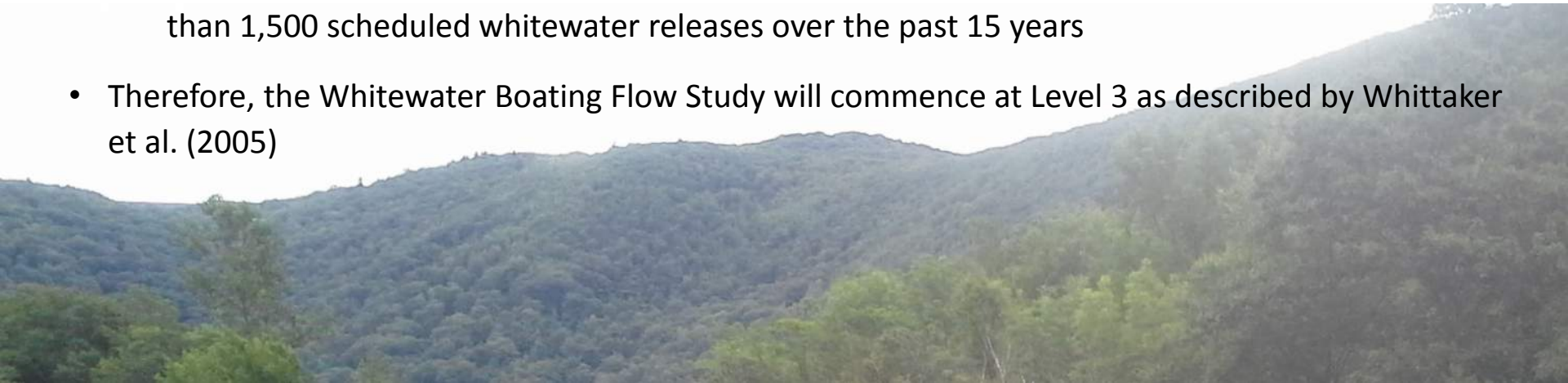


Fife Brook Development

Whitewater Boating Flow Study

“[BSPC] should conduct a controlled whitewater boating flow study using the methods described in Whittaker et al. (2005). At a minimum, the flow study should assess four flows, including the existing 700 cfs flow, one lower flow, and two higher flows. The study should test the effects of these flows on the common types of boating that are known to occur downstream of Fife Brook dam, which would include (but not be limited to) kayaks, canoes, and inflatable rafts and inner tubes. We recommend that the study methodology and selection of specific flows and boat types be further developed in consultation with local whitewater boating groups.”

- Information corresponding to Whittaker et al.’s desk-top (Level 1) and on-site field reconnaissance (Level 2) study options exist and has been documented
 - In accordance with Whittaker et al. (2005), Level 1 desk-top information is summarized in the PAD and the existing body of literature, including the *Deerfield River Guidebook*, and information available from AW and other websites (e.g., commercial outfitters)
 - In accordance with Whittaker et al. (2005), Level 2 field reconnaissance data includes more than 1,500 scheduled whitewater releases over the past 15 years
- Therefore, the Whitewater Boating Flow Study will commence at Level 3 as described by Whittaker et al. (2005)



Objective: Improve precision of estimated flow ranges for boating opportunities by having a panel of boaters evaluate several known (usually controlled) flows (Whittaker et al. 2005)

- The study will assess four flows, including the existing 700 cfs flow, one lower flow, and two higher flows
- Pre-Run, Post-Run, and Comparative Survey Forms will be completed by a panel of experienced boaters (participants) to evaluate flows

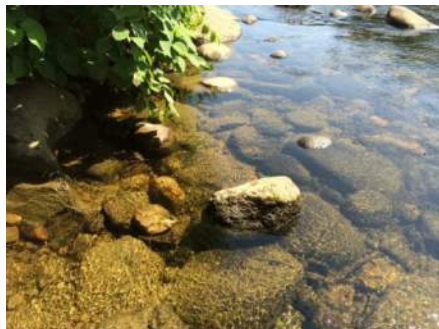
Task	Schedule
Identify One Lower Flow and Two Higher Flows for Whitewater Boating Flow Study	February 23, 2016
Identify a Panel of Approximately 25 Boaters that Includes Experienced Kayakers, Canoeists, Commercial Rafter (e.g., Whitewater Guides), Tubers and/or Other Boat Types as Applicable	March 18, 2016
BSPC to Distribute Draft Pre-Run Survey, Post-Run, and Comparative Survey Forms to Panel	March 31, 2016
Panel to Provide Comments on Draft Survey Forms to BSPC	April 30, 2016
Coordinate Study Logistics with Panel and Finalize Survey Forms	May 1, 2016 – June 1, 2016
Conduct Whitewater Boating Flow Study	June 2016 – September 2016 (Exact dates TBD and dependent on river and flow coordination conditions)



Baseline Study of Freshwater Mussel Species

“...consult with resource agency staff or other qualified biologists to determine the number and location of mussel survey sites along the 17-mile stretch of the Deerfield River” (FERC 2015).

- The sampling effort proposed for the downstream reach below Cold River *“should be commensurate with the level of effort proposed for the upstream section of the Deerfield River”* (FERC 2015)
- BSPC’s RSP proposed to survey for mussels at 9 sites in representative mesohabitat types that will be identified in the Aquatic Mesohabitat Assessment and Mapping Study
 - 8 in the 7.5-mile-long reach downstream of the Fife Brook Dam to the confluence with the Cold River approximately 1 site per river mile
 - 1 in the upstream end of the Lower Reservoir
- Based on the SPD, field reconnaissance, consultation with a qualified biologist, and completed Mesohabitat Maps, BSPC is proposing a total of 17 sites including 1 in the upstream end of the Lower Reservoir
- The proposed survey sites are shown on the Mesohabitat Maps





State-listed Odonates Survey

“...we recommend that Bear Swamp survey the entire reach of the Deerfield River from Fife Brook dam to the upstream extent of the Deerfield No. 4 impoundment. The level of sampling effort within this reach should be commensurate with the level of effort proposed for the upstream section of the Deerfield River” (FERC 2015).

- BSPC’s RSP proposed to conduct state-listed odonates surveys every 2 weeks at five, 100-foot-long transects, including 1 in the upstream extent of the Lower Reservoir and 4 transects along the 7.5-mile-long reach extending downstream of the Fife Brook Dam to the confluence with the Cold River
- Based on the SPD and mesohabitat mapping, BSPC is proposing an additional 4 sites extending from the Cold River downstream to the upstream extent of the Deerfield Station No. 4 impoundment
- Proposed survey transects were selected based on the Aquatic Mesohabitat Assessment and Mapping Study and are shown on the Mesohabitat Maps





Fife Brook Development

Closing

- BSPC anticipates continued coordination with stakeholders over the next several months regarding study logistics
- All stakeholders are encouraged to contact Brookfield directly at any time with any questions about the Project:

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