FERC Proposed Study Plan Meetings

June 4, 2013

Northfield Mountain Pumped Storage Project (FERC No. 2485)

Turners Falls Hydroelectric Project (FERC No. 1889)

Agenda

June 4: 9 am to 4 pm

3.3.4 Evaluate Upstream Passage of American Eel at Turners Falls

3.3.3 Evaluate Downstream Passage of Juvenile American Shad

3.3.5 Evaluate Downstream Passage of American Eel

3.3.7 Fish Entrainment and Turbine Passage Mortality Study

4.3.1 Shad Population Model for the Connecticut River

Study 3.3.4: Evaluate Upstream Passage of American Eels at the Turners Falls Project

Objectives:

- Identify and assess potential locations for upstream American eel passage by identifying concentrations of eels staging in pools or attempting to ascend wetted structures
- Assess whether sites are viable for permanent passage structures.

Geographic Scope:

- Turners Falls Project.

Study 3.3.4: Evaluate Upstream Passage of American Eels at the Turners Falls Project

Task 1: Systematic Surveys

- Conduct 6 night-time field surveys during 2014
- Surveys will be visual inspections in areas where eels are likely to find egress.
- Record location, presence of eels, relative numbers, relative size, behaviors, time and date of observations.

Task 2: Trap Collections

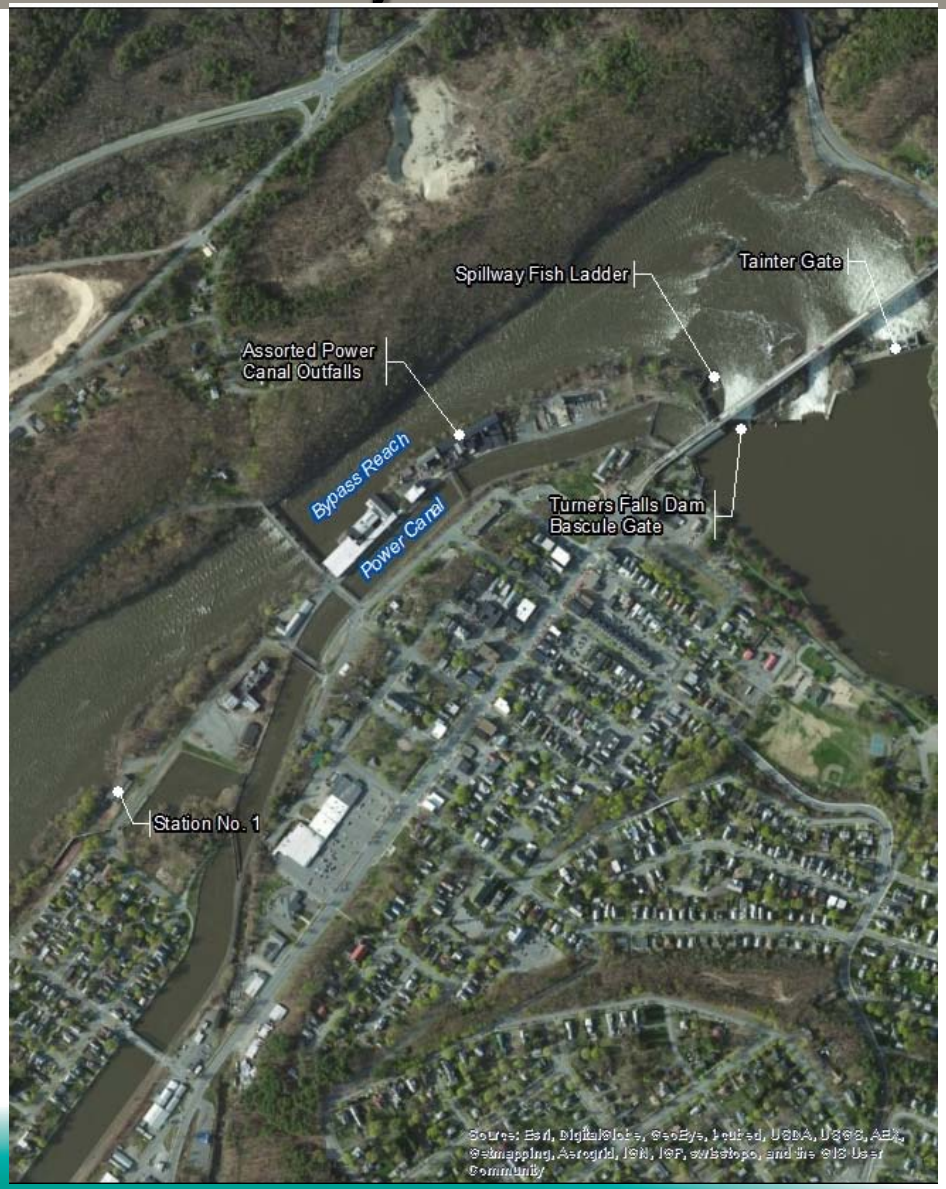
- Areas identified in 2014 will be assessed using temporary/portable traps in 2015.
- Traps will operate 24-h day and checked to quantify catch.

Task 3: Data Analysis

Task 4: Reporting

Study 3.3.4: Evaluate Upstream Passage of American Eels at the Turners Falls Project

Eel Survey Areas



Study 3.3.4: Evaluate Upstream Passage of American Eels at the Turners Falls Project

Eel Survey Areas

Study 3.3.3: Evaluate Downstream Passage of Juvenile American Shad

Objectives:

- Determine if project operations affect juvenile American shad timing, orientation, routes, migration rates and survival during outmigration.
- Downstream passage routes
- Downstream passage survival
- Entrainment survival

Geographic Scope:

- Turners Falls Impoundment upstream of Northfield Mountain Project, downstream to the confluence of the Deerfield River.

Study 3.3.3: Evaluate Downstream Passage of Juvenile American Shad

Task 1: Evaluation of Timing, Duration and Magnitude of Migration

- Hydroacoustics will be deployed at Cabot Station during the d/s season

Task 2: Evaluate Route of Passage Choice and Delay

- If feasible, radio telemetry will be used to assess routes of d/s passage.
- Proof of concept during 2014

Task 3: Survival

- Balloon tags may be used to determine survival at Station No. 1 and Cabot Station, if possible.

Task 4: Reporting

Study 3.3.5: Evaluate Downstream Passage of American Eel

Objectives:

- Quantify the migratory timing, movement rates, survival and proportion of eel passing via various passage routes.

Geographic Scope:

- Turners Fall Impoundment upstream of Northfield Mountain Project, down to the confluence of the Deerfield River.

Study 3.3.5: Evaluate Downstream Passage of American Eel

Task 1: Evaluation of Timing of Downstream Migratory Movements

- Hydroacoustics will be deployed at Cabot Station during the d/s season in 2014

Task 2: Assessment of downstream passage of American eel

- Radio telemetry will be used to assess routes of d/s passage in 2015
- Silver eels will be collected at the Cabot sampler and Holyoke bypass sampler
- Tagged eels will be released 5 km upstream of NM
- Tagged eels will be released 3 km upstream of TF Dam during various flow conditions
- Stationary receivers and mobile tracking will be employed

Task 3: Data management and Analysis

- Data will be collected every 2 to 3 days and entered into a database for post processing

Task 4: Reporting

Study 3.3.7: Fish Entrainment and Turbine Passage Mortality Study

Objectives:

- Assess fish impingement, turbine entrainment and turbine passage survival,
- Develop a qualitative scale of entrainment risk for resident and migratory species, and
- Perform a quantitative assessment of turbine passage mortality of American shad and American eel.

Geographic Scope:

- Turners Falls and Northfield Mountain Projects.

Study 3.3.7: Fish Entrainment and Turbine Passage Mortality Study

Task 1: Qualitative Assessment of Entrainment and Impingement

- EPRI approach that provides seasonal and annual estimated entrainment risk
- Probability of entrainment will include examination of facility characteristics and life history traits
- Impingement analysis will be performed to estimate physically exclusion of fish

Task 2: Quantification of American shad and American eel Entrainment and Survival

- Estimate will be derived from tagging studies (Study Nos. 3.3.2, 3.3.3 and 3.3.5)

Task 3: Reporting

Study Not Proposed: Shad Population Model for the Connecticut River

FirstLight received requests to develop an American shad population model using existing data to quantify how project operations and potential restoration/mitigation measures impact the Connecticut River shad populations.

Rationale for Not Conducting Study

- A suite of fish passage studies is being proposed and results of these studies along with the multiple past studies should be ample to assess fish passage efficiency.
- A predictive model already exists which historically generated accurate results, but did not predict the downturn in returning shad likely caused by competition and predation.
- It is unclear how output from requested model would contribute to FERC's analysis of project effects and potential PME measures as compared to results of targeted fish passage effectiveness testing.