REVIEW OF APPLICATION FOR RE-CERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE OF THE RED BRIDGE HYDROELECTRIC FACILITY

Prepared by Patricia McIlvaine

November 13, 2018

I. INTRODUCTION

This report summarizes the review findings of the application submitted by Nautilus Hydro, LLC. (now Central Rivers Power MA, LLC or "Applicant") to the Low Impact Hydropower Institute (LIHI) for re-certification of the Red Bridge Hydroelectric Project FERC P-10676 (Red Bridge or Project). North America Energy Alliance, LLC owned the Project when first certified by LIHI after which it was sold to Essential Power Massachusetts, LLC. On April 13, 2017, Essential Power Massachusetts, LLC transferred the direct ownership of its hydroelectric power facilities, including Red Bridge Project, to Nautilus Hydro, LLC, and the company name was subsequently changed to Central Rivers Power MA, LLC on June 20, 2018. The Project was initially certified by LIHI as Low Impact on September 16, 2012: LIHI Certificate No. 96, received an extension, now having a new expiration date of January 31, 2019. This re-certification review was conducted in compliance with LIHI's Handbook, 2nd Edition, dated March 7, 2016.

The original Certification Report can be accessed via the link below. Details on the Project and several figures incorporated into this Report were taken from this Report:

https://lowimpacthydro.org/wp-content/uploads/2013/07/Red-Bridge-Final-Review-Report-2012-07-26.pdf

The Project's 2012 certification had four conditions:

> CONDITION A. LIHI's review identified that the required Flow Monitoring Plan was never finalized. As part of US Fish and Wildlife Service (USFWS) and Massachusetts Division of Fisheries and Wildlife's (MDFW) approval of the recently submitted Flow Monitoring Plan, these agencies required submission, review and approval of six months of flow data by the USFWS. Therefore, Essential Power shall provide LIHI a letter documenting that such records have been provided at the conclusion of the six months.
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> CONDITION B. As part of USFWS and MDFW's approval of the recently Flow Monitoring Plan, the USFWS and MDFW also required Essential Power to submit a designated 24-hour period of empirical data to compare with the calculated flows for USFWS's evaluation of the Flow Monitoring Plan. Essential Power shall provide LIHI certification that such data has been submitted, as well as documentation of the USFWS review/approval or concerns found with this data comparison.

CONDITION C. Should this USFWS review process find that modifications are needed to the Flow Monitoring Plan, Essential Power shall forward a copy of the modifications, along with resource agency approval of these modifications, within one month of submission to FERC of the revised Flow Monitoring Plan. Essential Power shall also provide LIHI a copy of FERC's final Plan approval within one month of receipt of this approval.

CONDITION D (revised July 17, 2013). During the evaluation of the Red Bridge Project we discovered that the owners of the Red Bridge Project (LIHI Certificate No. 96) and the Collins Project (LIHI Certificate No. 88) each felt that the other project's operations negatively affected flows. These differences came to a head when the Collins owner contacted LIHI and asked us to "get involved". The Red Bridge owner wrote a response to Collins' complaints. After discussions with both parties, LIHI proposed the following and the owners agreed.

> 1. The Parties would meet and come to a consensus decision regarding flows that the owners believe complies with LIHI Criteria and Resource Agencies standards and requirements; and
> 2. The Parties will provide copies of the decision to resource agencies requesting a response by December 7, 2012; and
> 3. If a mutually agreeable solution cannot be reached with the Collins owner, the Red Bridge owner will work directly with appropriate state and federal resource agencies to identify a solution for operational flow enhancements; and
> 4. Every six months Red Bridge will make a report to the LIHI staff on the status of the discussions on this topic.

All four conditions were closed by July 6, 2018, based on communications between the Applicant and LIHI staff. The fourth condition was determined by LIHI staff to no longer be needed as the operational issues between the past owners had been resolved.

II. RECERTIFICATION PROCESS AND INITIAL ASSESSMENT

Under the 2016 LIHI Handbook, reviews are a two-phase process starting with a limited review of a completed LIHI application, focused on three questions:

(1) Is there any missing information from the application?
(2) Has there been a material change in the operation of the certified facility since the previous certificate term?
(3) Has there been a change in LIHI criteria since the Certificate was issued?

In accordance with the Recertification Standards, if the only issue is that there is some missing information, the Applicant will have the opportunity to provide the missing information, and this may or may not trigger a Stage II review. These standards also state that "material changes" mean non-compliance and/or new or renewed issues of concern that are relevant to LIHI's criteria. If the answer to either question (2) or (3) is "Yes," the application must proceed through a second phase, which consists of a more thorough review of the application using the LIHI criteria in effect at the

time of the recertification application, and development of a complete Stage II Report. Because the new Handbook involves new criteria and a new process, the answer to question two for all projects scheduled to renew in 2017 is an automatic 'YES.' Therefore, all Projects applying for renewal in 2017 are required to proceed through both phases of the recertification process.

A review of the initial application, dated June 23, 2018, resulted in a Stage I or Intake Report, dated June 23, 2018. The response to the Stage I Report was provided in the form of supplemental information from the Applicant rather than a final application, since the needed data was limited, the initial application was complete enough to be posted and no comments were received on the application.

This Stage II assessment included review of the application package, supplemental information, communications with the Applicant's representative, public records in FERC's eLibrary since LIHI recertification in September 2012, agency responses to questions asked, and the annual compliance statements received by LIHI during the past term of Certification.

III. PROJECT'S GEOGRAPHIC LOCATION

The Red Bridge Project is located in the Towns of Wilbraham, Ludlow, Palmer and Belchertown in Hampden and Hampshire Counties. The Red Bridge Project is situated downstream of other dams on the Ware and Swift Rivers, tributaries to the Chicopee River. The first dam on the Ware River is Thorndike Dam at river mile 20.5 while the first dam on the Swift River is the Upper Bondsville Dam at river mile 20.1. The Red Bridge Project is situated upstream of five other hydroelectric facilities located on the Chicopee River. The order of the hydroelectric dams, starting with the lowest dam on the Chicopee River is Dwight Station Project (P-10675) at river mile 1.2, Chicopee Falls Project (P-6522) at river mile 3.0, Indian Orchard Project (P-10678) at river mile 7.8, Putts Bridge Project (P-10677) at river mile 9.2, Collins Hydro Project (P-6544) at river mile 12.6 and Red Bridge Project (P-10676) at river mile 15.2. The Project and the other Applicant-owned dams on the Chicopee River have little to no control over their inflows. The Dwight Station Project (P-10675), Indian Orchard Project (P-10678) and Putts Bridge Project (P-10677) are also owned by the Applicant. The remaining downstream projects and all upstream projects, are owned by others.

Figures and photographs are in Appendix A. Figure 1 shows the location of the Red Bridge Project and other dams on the Chicopee River. The Zones of Effect (ZOEs) are designated on Figure 2. Figure 3 is an aerial image that shows key Project features as well as the ZOEs. Photographs showing the impoundment and downstream reach are also in Appendix A.

IV. PROJECT AND IMMEDIATE SITE CHARACTERISTICS

The dam, built ca. 1901, crosses the Chicopee River in a roughly north to south direction, and is composed of three sections: the northern section, which is 165 feet long, and the southern 362-foot-long section, are earthen embankment with a concrete core. The middle section of the dam is a rubble stone with cut-granite facing 300-foot-long overflow spillway with a crest elevation (El.) of 272.3 feet. The northern and southern embankments have a crest elevation of at El. 285.8 feet. The maximum height of the dam is approximately 51 ft. (All elevations are at mean sea level.)

The canal headgate house is a wooden structure on a granite block foundation, housing 10 intake gates that control the flow from the impoundment to the power canal. Each is equipped with a single stem lead screw gate operator, requiring manual operation. The power canal extends from the headgates to the penstock intake structure. The canal is approximately 340 feet long by 73 feet wide by 13 feet deep. The inner sidewalls are constructed of cut granite. Sloped earthen embankments create the outer walls. The floor of the canal is concrete.

The canal leads to the penstock intake structure for the two operating turbines and two penstocks abandoned in 1938. Adjacent to the trashracks on the upstream face of the intake is a cut-stone ice sluice that crosses beneath Red Bridge Road and discharges back into the Chicopee River. There is one cast iron drain gate, 3 feet wide by 2 feet high, operated by a lead screw mechanism. Two operable and two inoperable 13-foot-diameter, 100-foot-long steel penstocks lead underground to the powerhouse.

At normal pond elevation, the Red Bridge Project impoundment extends approximately 1.8 miles upstream of the dam, having a maximum surface area of approximately 185 acres at El. 272.3 feet. There is limited permitted storage (530 acre-feet) with a permitted daily drawdown of two feet (and three feet allowed during annual energy audits and system emergencies.) However, operation is voluntarily limited to a one-foot drawdown. Minimum flows are discharged to an approximate 1,600-foot-long bypass channel.

The combined installed capacity at the Project is 4.50 MW with a reported 12,715 MWh average annual generation for 2002-2017. There are no upstream or downstream fish passage features.

The only modification at the Project since last certified was construction of a higher power canal wall between the gatehouse and the Red Bridge bridge, completed in February 2013. This construction is not considered a facility upgrade since it did not increase any potential power production from the Facility, but was completed for dam safety improvements.

V. ZONES OF EFFECT

Three Zones of Effect (ZOE) were designated by the Applicant and were determined to be appropriate. These are identified on Figures 2 and 3 in Appendix A.

- ZOE #1 – Impoundment
- ZOE #2 – Bypass Reach
- ZOE #3 – Tailrace and Regulated Reach

VI. REGULATORY AND COMPLIANCE STATUS

The Project was granted an Exemption from Licensing by the Federal Energy Regulatory Commission (FERC) on September 11, 1992 as Project Number 10676. Amendments were issued on December 29, 1999 and November 8, 2001.

There is no Water Quality Certificate issued for the Red Bridge Project. The FERC exemption noted that no protests were issued during licensing and that comments received were incorporated

into FERC's decision. It only noted that comments were received from the Department of Interior and the "state fish and wildlife agency", thus it can be assumed that the Massachusetts Department of Environmental Protection (MADEP) did not have any concerns about the Project.

No compliance issues were identified in FERC's eLibrary or public comments. My review also confirmed that no material changes in the facility design or operation have occurred since the previous LIHI review other than the canal wall discussed above.

VII. PUBLIC COMMENT RECEIVED OR SOLICITED BY LIHI

The deadline for submission of comments on the LIHI certification application was October 6, 2018. No comments were received directly by LIHI.

Because the Applicant contacted the key agencies knowledgeable of the Project as part of the application process, I only contacted Robert Kubit of MADEP, Water Quality Division, to ask if any water quality concerns exist for the Project. He responded by forwarding me a letter dated September 11, 2018, which he had previously sent to the Applicant, in which he stated he was not aware of any concerns. In response to requests made by the Applicant's representative, letters were received from Caleb Slater, Anadromous Fish Project Leader for MDFW, and another from Robert Kubit, both dated November 7, 2018. An email was also provided by Melissa Grader, Biologist with the USFWS on November 6, 2018. All three communications noted that the Project appears to be in compliance with the License Exemption requirements. Copies of these letters are included in Appendix B.

VIII. SUMMARY OF COMPLIANCE WITH CRITERIA

The following tables show the Standards selected for each criterion for the three ZOEs.

ZOE #1 – Impoundment

		Alternative Standards				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	Ecological Flow Regimes	X				
B	Water Quality		X			
C	Upstream Fish Passage	X				
D	Downstream Fish Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection	X				
G	Cultural and Historic Resources Protection		X			
H	Recreational Resources		X			

ZOE #2 – Bypass Reach

	Criterion	*Alternative Standards*				
		1	***2***	***3***	***4***	***Plus***
A	Ecological Flow Regimes		X			
B	Water Quality		X			
C	Upstream Fish Passage	X				
D	Downstream Fish Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection	X				
G	Cultural and Historic Resources Protection		X			
H	Recreational Resources		X			

ZOE #3 – Tailrace and regulated Reach

	Criterion	*Alternative Standards*				
		1	***2***	***3***	***4***	***Plus***
A	Ecological Flow Regimes		X			
B	Water Quality		X			
C	Upstream Fish Passage	X				
D	Downstream Fish Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection	X				
G	Cultural and Historic Resources Protection		X			
H	Recreational Resources		X			

The Reviewer found that these standards are appropriate with the possible exception of use of Standard B-2 for Water quality for all ZOEs, as discussed under this criterion. I believe sufficient supporting data was provided which demonstrated compliance with all criteria. Details of compliance with the criteria are presented in Section IX.

IX. DETAILED CRITERIA REVIEW

A. ECOLOGICAL FLOW REGIMES

Goal: The flow regimes in riverine reaches that are affected by the facility support habitat and other conditions suitable for healthy fish and wildlife resources.

Standards: All river reaches where stream flows are altered by the facility shall be defined. In all locations, appropriate flow management should apply an ecosystem-based approach that supports fish and wildlife resources by considering base flows, seasonal variability, high flow pulses, short-term rates of change, and year-to-year variability. Compliance with one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must also be demonstrated.

Assessment of Criterion Passage

The Applicant selected Standard A-1, as suggested by Table B-2 of the 2016 LIHI Handbook, for ZOE #1, the impoundment. However, because there is a bypass, the Project operates in a limited store and release mode, and there are headpond limits, I also reviewed the Project against **Standard A-2, Agency Recommendation** for ZOE #1, as well as the Bypass and Tailrace (Regulated Reach) ZOEs to pass the Ecological Flow Regimes criterion. I believe the application does contain sufficient information to demonstrate compliance. This standard requires:

> "**STANDARD A-2. Agency Recommendation:** The flow regime at the Facility was developed in accord with a site--specific, science--based agency recommendation."

There have been no changes in requirements or in the mode of operation of the Facility (limited pond-and-release) since it was certified by LIHI in September 2012. The Red Bridge Project is operated in a limited pond-and-release mode, utilizing the storage capacity (185 acre-feet) afforded by a maximum one-foot drawdown, even though the FERC license exemption amendments allow a two-foot drawdown during certain times of the year. No limits on pond drawdown or re-fill rates are required. A bypass minimum flow of 237 cfs is required at all times, as established by flow studies conducted by the USFWS. The minimum flow was established as being suitable to support water quality and fisheries habitat needs in a letter dated January 27, 2000 from the USFWS. A MDFW letter, dated February 15, 2000, confirmed the 237 cfs as the minimum flow for Red Bridge Project as acceptable. Both letters can be found in the original LIHI Certification Report.

The Applicant reported that in the future they may change the mode of operation to run-of-river with a minimum flow to the bypass on the order of 100cfs. It is unclear when this change may be licensed and implemented. A condition to re-certification is recommended addressing this potential change.

Supplemental information (copies of letters to FERC confirming flow requirements were met each year) included sufficient data to show compliance with the minimum flow releases during the past five years. Review of the FERC eLibrary did not show any deviation reports to FERC. Likewise, letters received from R. Kubit and C. Slater dated November 7, 2018, confirmed that they were not aware of any flow-related non-compliance issues.

This Project Conditionally Passes Criterion A – Ecological Flow Regimes- Go to B

B. WATER QUALITY

Goal: Water Quality is protected in waterbodies directly affected by the facility, including downstream reaches, bypassed reaches, and impoundments above dams and diversions.

Standards: Compliance with the appropriate state/provincial or federal water quality standards must be demonstrated with all waterbodies where water quality is directly affected by the facility, including those affected areas outside the facility boundary. In all cases, if any waterbody directly affected by the facility has been defined as being water quality limited (for example, on a list of waters with quality that does not fully support designated uses), it must be demonstrated that that the facility has not contributed to that substandard water quality.

Compliance with one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must also be demonstrated.

Assessment of Criterion Passage

The Applicant selected Standard **B-2, Agency Recommendation** to pass this criterion, however I believe that **Standard B-1, Not Applicable/De Minimis Effect**, is more appropriate for all ZOEs. This Standard requires:

> **"STANDARD B-1. Not Applicable/De Minimis Effect**: The facility does not alter the physical, chemical, or biotic water characteristics necessary to support fish and wildlife resources or human water uses (e.g., water supply or recreation)."

A Water Quality Certification was not issued and there was no specific agency recommendation related to water quality in the FERC license exemption. However, in a letter dated September 11, 2018, and another on November 7, 2018, Mr. Robert Kubit of the MADEP made the following comments. Data from the draft Massachusetts 2016 Integrated List of Waters is also incorporated below.

Impoundment

The Red Bridge Project is not expected to cause or contribute to violation of the state water quality standards given the impoundment retention time of only one day, based on an assessment made in the 1989 Environmental Assessment and Water Quality Report developed during licensing, and more recent data collected 3.8 miles upstream of the impoundment. This latter data (from the draft Massachusetts 2016 Integrated List of Waters) showed impairment for Escherichia coli, with upstream sources being the likely source. Impairment is also listed for mercury in fish tissue with atmospheric deposition is the expected cause. All other uses were met.

Bypass Reach and Tailrace/Regulated Reach

Mr. Kubit stated that based on data collected 2.8 miles downstream, there were no water quality issues for these ZOEs. Data from the draft Massachusetts 2016 Integrated List of Waters showed all uses were met. In his letter, Mr. Kubit stated he believes that the Red Bridge Project does not cause or contribute to any water quality standards in these two ZOEs.

The Chicopee River Watershed Water Quality Assessment Report dated October 2008, included reference to these two ZOEs as having an Alert Status. According to information received from Mr. Kubit, this is an internal administrative tool used by the MADEP. "Alert Status" is used to identify any issues of interest the MADEP may have for a particular waterbody that should be followed carefully, and may be used to help focus and prioritize future monitoring activities. For these two ZOE's the issue identified was the potential impacts of hydropower operations on the river. However, it is not an assessment and has no implications for 305(b)/303(d) assessment. Based on this information, I believe the Project has demonstrated compliance with this criterion.

This Project Passes Criterion B – Water Quality- Go to C

C. UPSTREAM FISH PASSAGE

Goal: The facility allows for the safe, timely, and effective upstream passage of migratory fish. This criterion is intended to ensure that migratory species can successfully complete their life cycles and maintain healthy, sustainable fish and wildlife resources in areas affected by the facility.

Standards: The applicant shall list all migratory fish species (for example, anadromous, catadromous, and potamodromous species) that occur now or have occurred historically at the Facility. Maintenance of upstream passage sufficient to support sustainable populations of these migratory species must be demonstrated by compliance with one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard C-1, Not Applicable/De Minimis Effect** as applicable to all ZOEs. This standard requires:

> ***"STANDARD C-1. Not Applicable/De Minimis Effect***: The facility does not create a barrier to upstream passage, or there are no migratory fish in the vicinity of the facility and the facility is not the cause of extirpation of such species if they had been present historically."

Upstream passage of anadromous species is blocked by the downstream dams including Dwight Project, Indian Orchard, Putts Bridge, and Collins.

Standard C-1 has been determined to be appropriate for all ZOEs at this time since there are five downstream dams within 15 miles that have no upstream facilities for anadromous or catadromous species. Thus, it is unlikely that migratory species, with the possible exception of American eel, are currently found in the area of Red Bridge. A recent (2017) LIHI assessment done on the downstream Collins Dam found that the fisheries agencies are not currently requiring upstream passage for anadromous species, nor American eel, at Collins, as the number of eels at this downstream dam are limited. A letter dated November 7, 2018, from C. Slater of MADFW, confirmed that no upstream passage is required at Red Bridge at this time. However, such passage may be requested by the agencies in the future. The oldest of these downstream dams dates back to the late 1800s and was constructed well before there were any hydroelectric generating facilities on the river. Thus, Red Bridge Project was constructed after anadromous fish were extirpated from the Project area.

The 1992 License Exemption, Article 2, contains a requirement that the Exemptee would construct, operate, maintain and monitor upstream and downstream fish passage facilities when prescribed by the USF&S or MADFW. These requirements are noted as mandatory terms and conditions under Section 30(c) of the Federal Power Act and Section 408 of the Energy Security Act. As written, these requirements clearly apply to both anadromous and riverine fish, but remain "silent" with regard to catadromous species. The Owner is committed to fulfill these obligations when required by the fisheries agencies.

Currently there are no active migratory fish management efforts within the Chicopee River watershed. However, a condition has been recommended to address this potential need if it should occur within the next five years.

This Project Conditionally Passes Criterion C – Upstream Fish Passage- Go to D

D. DOWNSTREAM FISH PASSAGE AND PROTECTION

Goal: The facility allows for the safe, timely, and effective downstream passage of migratory fish. For riverine (resident) fish, the facility minimizes loss of fish from reservoirs and upstream river reaches affected by Facility operations. All migratory species are able to successfully complete their life cycles and to maintain healthy, sustainable fish and wildlife resources in the areas affected by the Facility.

Standards: The applicant shall list all fish species (for example, riverine, anadromous, catadromous, and potamodromous) that occur now or have occurred historically in the area affected by the Facility. To pass the downstream fish passage and protection criterion, compliance with one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must be demonstrated.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard D-1, Not Applicable/De Minimis Effect** for all ZOEs. This standard requires:

> ***"STANDARD D-1. Not Applicable/De Minimis Effect:*** The facility does not create a barrier to downstream passage, or there are no migratory fish in the vicinity of the facility; if migratory fish had been present historically, the Facility is not responsible for extirpation of such species; the Facility does not contribute adversely to the sustainability of riverine fish populations or to their access to habitat necessary for the completion of their life cycles."

Standard D-1 has been determined to be appropriate for all ZOEs at this time given the lack of constructed upstream passage facilities on any of the five downstream dams. As a result, it is unlikely that migratory species, with the possible exception of American eel, are currently found in the area of Red Bridge. A letter dated November 7, 2018, from C. Slater of MADFW, confirmed that no downstream passage is required at Red Bridge at this time. The application also noted that while not a specifically designed downstream passage, the Project's minimum flow gate does permit the passage downstream of riverine fish and eel. As noted above, the License exemption does include requirement for the construction of downstream passage when determined to be needed by the fisheries agencies and the Owner is committed to do so when requested. A condition has been recommended to address this potential need if it should occur within the next five years.

The Project Conditionally Passes Criterion D – Downstream Fish Passage and Protection - Go to E

E. SHORELINE AND WATERSHED PROTECTION

Goal: The Facility has demonstrated that sufficient action has been taken to protect, mitigate and enhance the condition of soils, vegetation and ecosystem functions on shoreline and watershed lands associated with the facility.

Standards: To pass the watershed protection criterion for LIHI certification, the applicant shall demonstrate compliance with one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard E-1, Not Applicable/De Minimis Effect** to pass the Shoreline and Watershed Protection criterion for the Project. This standard requires:

> ***"STANDARD E-1. Not Applicable/De Minimis Effect:*** There are no lands associated with the facility under ownership and control of the applicant that have significant ecological value for protecting water quality, aesthetics, or low-impact recreation, and there has been no Shoreline Management Plan (SMP) or similar protection required at the facility; or the facility has no direct or indirect project-related land ownership, excluding lands used for power generation and transmission, flowage rights and required developed recreational amenities."

There has been no change in the Shoreline and Watershed Protection requirement of the Facility since it was certified by LIHI in 2012 for any of the ZOEs. No conservation buffer zone, watershed enhancement fund nor a shoreland management plan were required by the FERC License Exemption for the Red Bridge Project, although as typical, an Erosion Control Plan was required under Article 14 whenever land-disturbing, land-clearing or spoil producing activity adjacent to the impoundment is undertaken. No such work has taken place since last certified by LIHI.

The Project boundary consists of 189 acres, of which approximately 185 acres are impoundment. The remaining four acres include Project structures, adjacent fields or typical forested cover. No State-designated priority habitat having unique ecological value for sensitive species have been identified in the vicinity of the Project. It does not appear that Project lands include any areas of significant ecological value.

The Project Passes Criterion E – Shoreline and Watershed Protection - Go to F

F. THREATENED AND ENDANGERED SPECIES PROTECTION

Goal: The Facility does not negatively impact listed species.

Standards: Facilities shall not have caused or contributed in a demonstrable way to the extirpation of a listed species. However, a facility that is making significant efforts to reintroduce an extirpated species may pass this criterion. To pass the Threatened and Endangered Species criterion compliance with at least one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must be demonstrated.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard F-1, Not Applicable/De Minimis Effect** to pass the Threatened and Endangered Species Protection criterion for the Project. This standard requires:

> ***"STANDARD F-1. Not Applicable/De Minimis Effect:*** There are no listed species present in the facility area or downstream reach, and the facility was not responsible for the extirpation of the listed species if they were previously there

The application contained documentation showing that the only federally-protected species potentially in the Project area is the Northern Long-eared Bat, because its habitat may exist statewide. Applicant communication with the MDFW, Natural Heritage & Endangered Species Program indicated that none of the ZOEs are mapped as Priority or Estimated Habitat and their database did not contain any state-listed species records in the immediate vicinity of the Project area. Thus, it appears that even the Northern Long-eared Bat is not expected at the Project.

The Project Passes Criterion F – Threatened and Endangered Species Protection - Go to G

G. CULTURAL AND HISTORIC RESOURCE PROTECTION

Goal: The Facility does not inappropriately impact cultural or historic resources that are associated with the Facility's lands and waters, including resources important to local indigenous populations, such as Native Americans.

Standards: To pass the Cultural and Historic Resource criterion compliance with one or more of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must be demonstrated.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard G-1, Not Applicable/De Minimis Effect** to pass the Cultural and Historic Protection criterion for the Project for all ZOEs. This standard requires:

> ***"STANDARD G-2. Approved Plan:*** The facility is in compliance with approved state,

provincial, federal, and recognized tribal plans for protection, enhancement, or mitigation of impacts to cultural or historic resources affected by the facility."

The Red Bridge Project was included in the National Register of Historic Places as part of the Ludlow Village Historic District in 1993. Article 12 of the License Exemption requires consultation with and approval by the State Historic Preservation Officer (SHPO) prior to modification of the existing historic features of the Project. Article 13 requires similar consultation with the SHPO prior to land-disturbing or land clearing activities within the Project boundaries, and should any new historical features or artifacts be found, that a Cultural Resource Management Plan be prepared for SHPO approval and implementation.

Since last certified by LIHI, the only construction at the Project was the heightening of the power canal wall for dam safety improvements required by FERC. This work was designed and completed by a previous owner of the Red Bridge Project. Review of information regarding this construction included records in FERC's eLibrary, specifically the Owner's submission to FERC for approval of the work in a letter September 24, 2012, FERC's approval of the construction plans dated October 3, 2012 and FERC's Order dated October 4, 2013 approving the as-built drawings of the completed canal wall work. I have assumed that FERC's approval of these activities either demonstrates compliance with the FERC conditions established in the Project's license exemption, or that these improvements were needed to ensure public safety despite any possible historical significance of the wall.

The Project Passes Criterion G - Cultural and Historic Resource Protection - Go to H

H. RECREATIONAL RESOURCES

Goal: The facility accommodates recreation activities on lands and waters controlled by the facility and provides recreational access to its associated lands and waters without fee or charge.

Standards: To pass the recreation criterion, compliance with at least one of the alternative standards identified in the Low Impact Hydropower Certification Handbook issued March 7, 2016 must be demonstrated. In all cases, it must be demonstrated that flow-related recreational impacts are mitigated to a reasonable extent in all zones where there is flow-related recreation. Where there is recognized, flow-related recreational use, the facility shall provide the public with relevant and up-to-date information on reservoir levels and river flows, preferably real-time updates. It is understood that recreational activities must be consistent with the assurance of reasonable safety of employees and the public, and with critical infrastructure protection dictated by state or federal authorities.

Assessment of Criterion Passage

The Applicant has selected and demonstrated compliance with **Standard H-2, Agency Recommendation** to pass the Recreational Resources criterion for the Project for all ZOEs. This standard requires:

"STANDARD H-2. Agency Recommendations: If there are comprehensive resource agency recommendations for recreational access or accommodation (including recreational flow releases) on record, or there is an enforceable recreation plan in place, the Facility

demonstrates that it is incompliance with those."

Various recreational facilities were developed by the Owner at the time in the 1970's, including a small boat access area at the impoundment near the gatehouse, picnic facilities, a hiking trail along an abandoned railroad right-of-way paralleling the impoundment north shore and a small boat/canoe put-in below the powerhouse tailrace. As verified in the original LIHI Certification review, these facilities have been deeded over to Massachusetts Department of Conservation and Recreation (MDCR), who maintains them along with assistance from Massachusetts Department of Fish and Game (MDF&G).

There has been no change in the Recreational Resource requirement of the Facility since it was certified by LIHI in 2012 for any of the ZOEs. A letter from the MDF&G dated June 26, 2018 confirmed that they and MDCR continue to provide maintenance service at the Red Bridge.

The Applicant stated that no FERC environmental inspection was conducted at the site in the last five years. As the state agencies who maintain the recreational facilities confirmed their continuing obligations to do so, I believe the Project meets the requirements of this criterion.

The Project Passes Criterion H – Recreational Resources

X. GENERAL CONCLUSIONS AND REVIEWER RECOMMENDATION

Based on my review, I believe that this Project meets the requirements of a Low Impact facility and recommend it be re-certified for a five-year period with the conditions noted below. They will ensure continued satisfaction of the criteria addressing flows and upstream and downstream fish passage.

- Should the Owner receive notification during the term of this LIHI Certification from either the USFWS or MADFW that upstream and/or downstream passage for anadromous or catadromous fish is required, based on sound science / technical data that has shown that such passage is required at the Red Bridge Project, the Owner shall forward a copy of that notification and its response to LIHI within 45 days of receipt of the notification.

- Should the operation of the Project be changed to run-of-river along with a modification in minimum flow release requirements during the term of this Certification, the owner shall notify LIHI of this change and provide copies of documents showing resource agency and FERC approval of the change. This LIHI notification shall be provided within 45 days of receipt of final approval of the modification.

THE RED BRIDGE PROJECT CONDITIONALLY MEETS THE LIHI CRITERIA FOR CERTIFICATION AS A LOW IMPACT FACILITY

APPENDIX A

Figures and Photographs

Figure 1 – Dams on the Chicopee River

Figure 2 – Red Bridge Project Zones of Effect

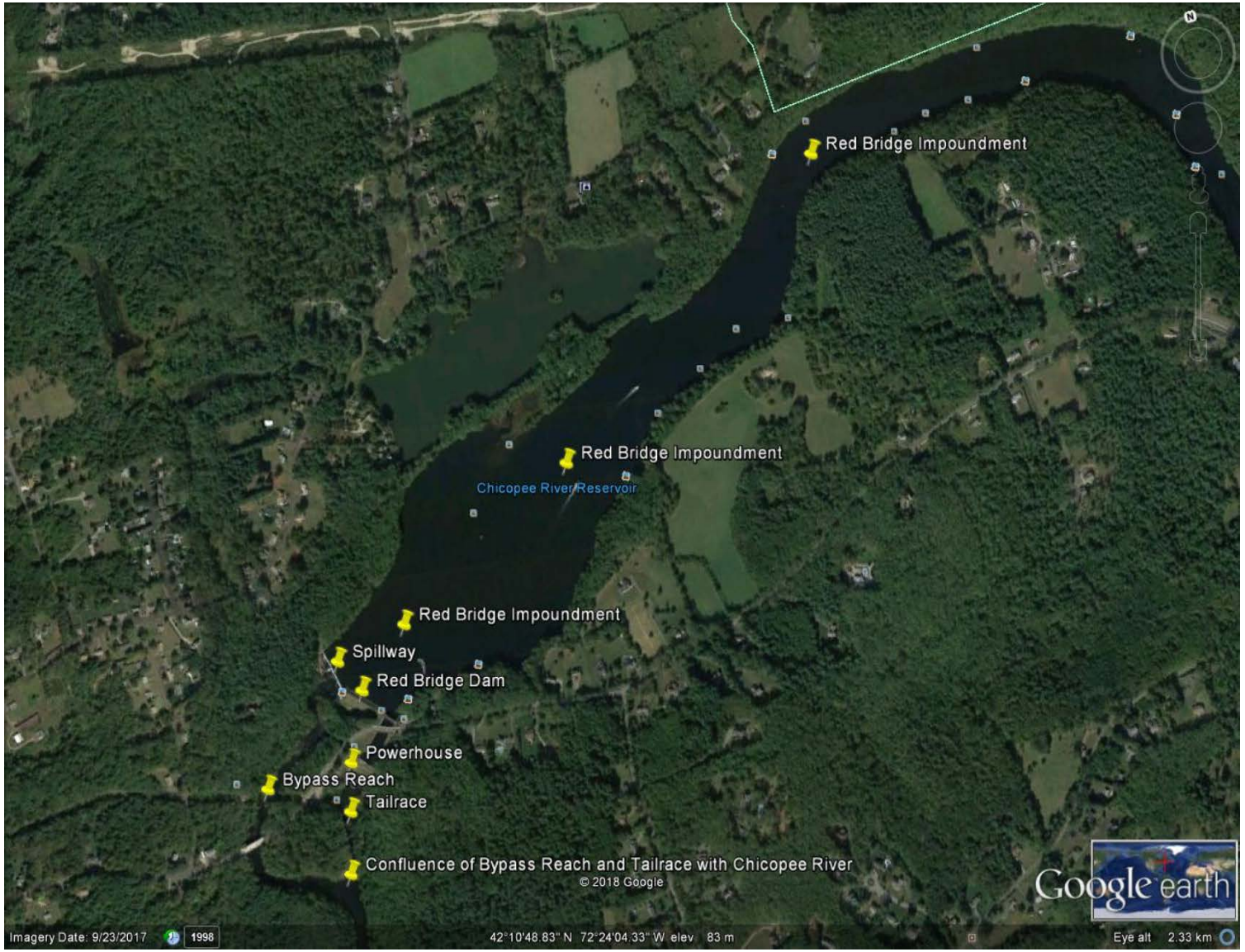
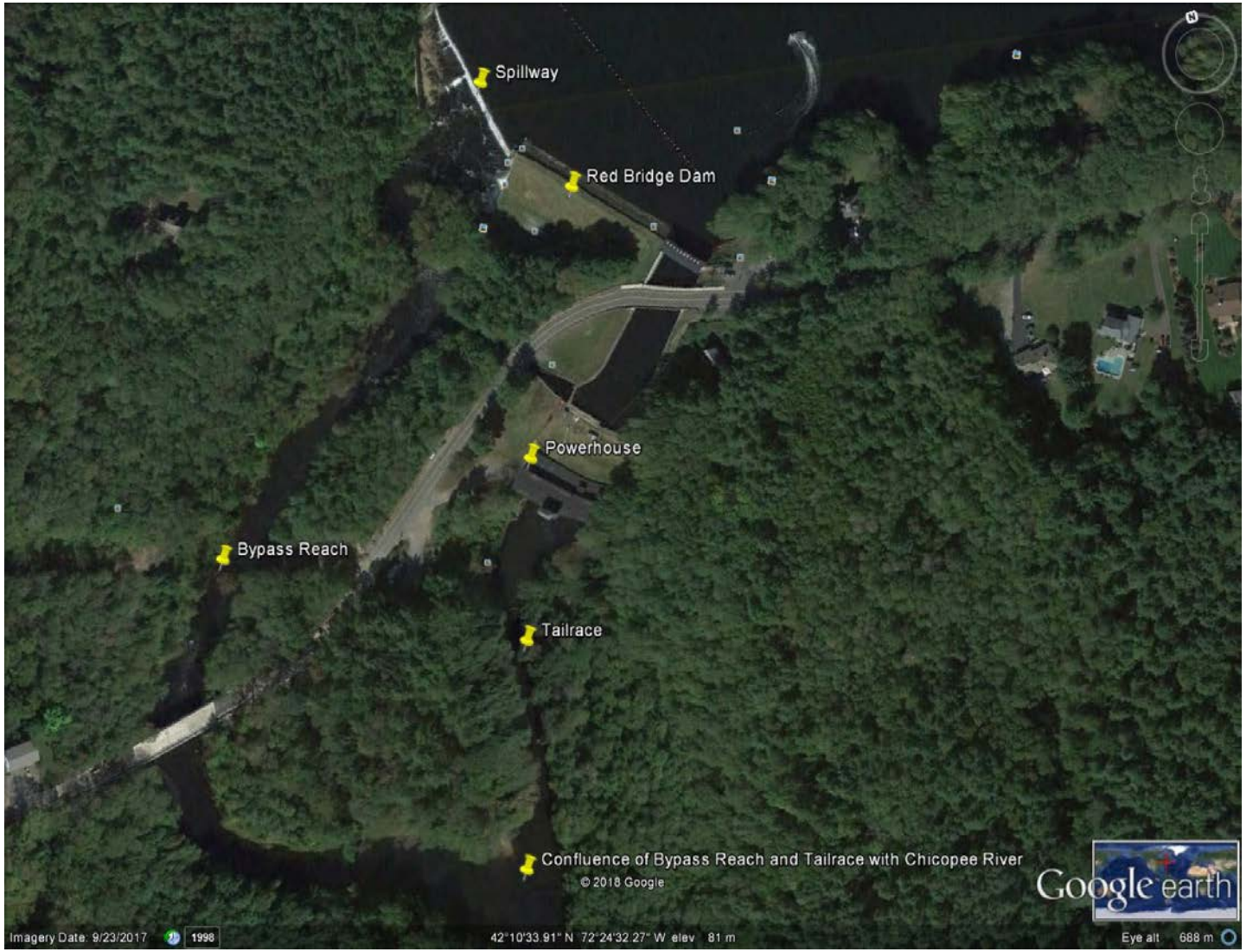


Figure 3 – Close-up of Bypass ZOE



Photograph 1 –Dam and Minimum Flow Gate

Photograph 2 – Powerhouse and Tailrace

Photograph 3 – Bypass Reach Immediately Downstream of Spillway

Photograph 4 – Dam and Impoundment

APPENDIX B

Agency Letters

From:	Grader, Melissa
To:	Bill Short
Cc:	Caleb Slater; wareriverpower@aol.com; Robert Kubit; Kevin Telford; Randall Osteen; rmcqueeney@hullstreetenergy.com; Matthew Willis; shofmeister@hullstreetenergy.com
Subject:	Re: [EXTERNAL] RE: LIHI Re-Certification of Red Bridge Project -- Flows
Date:	Tuesday, November 6, 2018 2:46:14 PM
Attachments:	image002.jpg

Dear Bill,

I know you have been trying to contact me and I apologize for not responding sooner. Unfortunately, my workload prevents me from being able to provide a LIHI consultation letter to you at the present time (and into the foreseeable future). I have already notified Mr. Wright of this situation.

What I can say is that, to the best of my knowledge, Hull Street Energy is presently in compliance with the terms and conditions issued by the Service for the Red Bridge Project.

I hope that suffices.

Best regards,

Melissa Grader
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service - New England Field Office
103 East Plumtree Road
Sunderland, MA 01375
413-548-8002 x8124
melissa_grader@fws.gov

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
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MASS.GOV/MASSWILDLIFE

November 7, 2018

William P. Short III
w.shortiii@verizon.net

RE: LIHI Re-Certification of Red Bridge Project

Dear Bill,

The Department of Fish and Game ("DFG") hereby submits the following comments on the Low Impact Hydropower Institute's ("LIHI") pending application for the proposed LIHI re-certification of the Red Bridge Project (FERC No. 10676) located on the Chicopee River in the Towns of Wilbraham, Ludlow, Palmer and Belchertown in Hampden and Hampshire Counties, Massachusetts:

DFG is submitting these comments to LIHI in order to fulfill the requirements of the Massachusetts Department of Energy Resources ("DOER") Renewable Energy Portfolio Standard Regulations (225 CMR 14.00; "RPS I" and 225 CMR 15.00; "RPS II"). The RPS I and RPS II regulations were promulgated by DOER on January 1, 2009 and require that any hydroelectric project wishing to qualify as either a RPS I or RPS II generator first obtain LIHI certification. These regulations also require all relevant regulatory agencies to comment on the pending LIHI application.

In response to your inquiries about LIHI re-certification:

1. **Minimum Flows in Bypassed Reach to the confluence with the tailrace and Chicopee River**
   The minimum flow for this reach is 237 cfs or inflow if less. The Massachusetts Division of Fisheries and Wildlife (MassWildlife) has no record that the Project has operated in non-compliance of the Project's minimum flow.

2. **Minimum Flows of Red Bridge Impoundment or Tailrace to the confluence with the bypassed reach and the Chicopee River**
   MassWildlife is unaware of any minimum flow requirement for Red Bridge impoundment or the tailrace to the confluence with the bypassed reach and the Chicopee River. Therefore, MassWildlife expresses no position on these minimum flows and any associated LIHI requirements for these flows.

3. **Upstream Fish Passage of the Bypassed Reach to the confluence with the tailrace and Chicopee River, Red Bridge Impoundment or Tailrace to the confluence with the bypassed reach and the Chicopee River.**
   There is no current requirement for upstream fish passage at the project and none is installed. However, the FERC exemption requires that once upstream fish passage is determined to be necessary (by MassWildlife and/or other relevant Federal or Massachusetts agencies) the Project Owner shall install acceptable upstream fish passage within two years. Given the Project

has no upstream fish passage requirements at this time, MassWildlife finds that the Project is in compliance with its FERC-mandated requirements for upstream fish passage.

4. **Downstream Fish Passage of the Bypassed Reach to the confluence with the tailrace and Chicopee River, Red Bridge Impoundment or Tailrace to the confluence with the bypassed reach and the Chicopee River.**
   There is no current requirement for downstream fish passage at the project and none is installed. However, the FERC exemption requires that once downstream fish passage is determined to be necessary (by MassWildlife and/or other relevant Federal or Massachusetts agencies) the Project Owner shall install acceptable downstream fish passage within two years. Given the Project has no downstream fish passage requirements at this time, MassWildlife finds that the Project is in compliance with its FERC-mandated requirements for downstream fish passage.

Please let me know if you need anything further.

Caleb Slater, PhD
Anadromous Fish Project Leader
Massachusetts Division of Fisheries and Wildlife
1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6331 | e: Caleb.Slater@state.ma.us

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

William P. Short III
On behalf of Central Rivers Power MA, LLC
P.O. Box 237173
New York, New York 10023-7173

November 7, 2018

Re: Request for Water Quality and Minimum Flow Status
Red Bridge Project, FERC #10676

Dear Mr. Short,

In order to achieve certification from the Low Impact Hydropower Institute, Central Rivers Power MA, LLC seeks a letter from the Massachusetts Department of Environmental Protection (Department) that discusses the water quality and the minimum flows at the Red Bridge impoundment, bypassed reach and tailrace.

Water Quality of Red Bridge Impoundment
The Department does not possess water quality data collected at the Project site; however, the Department does have data collected in the Project vicinity (river segment extending 3.8 miles upstream of the dam) and believes the presence of wet weather combined sewer overflows upstream of the Project is likely the cause for upstream waters to require a TMDL for pathogens. The likely cause of mercury in fish tissue is atmospheric deposition. The Department believes the Project does not cause nor contribute to the presence of pathogens or mercury in the Project area.

Based on the upstream impoundment estimated retention time of approximately one day and information from the 1989 Environmental Report and Water Quality Report prepared for the FERC exemption application, the Department does not expect the Project to cause or contribute to violations of state Water Quality Standards due to water chemistry.

Water Quality of Bypassed Reach to the confluence with the tailrace and Chicopee River
The Department does not possess water quality data collected at the Project site; however, the Department does have data collected in the Project vicinity (river segment extending 2.8 miles downstream of the dam) and believes state Water Quality

Standards are met. The Department believes the Project does not cause nor contribute to any state Water Quality Standards violations.

Water Quality of Tailrace to the confluence with the bypassed reach and the Chicopee River

The Department does not possess water quality data collected at the Project site; however, the Department does have data collected in the Project vicinity (river segment extending 2.8 miles downstream of the dam) and believes state Water Quality Standards are met. The Department believes the Project does not cause nor contribute to any state Water Quality Standards violations.

Minimum Flows of Bypassed Reach to the confluence with the tailrace and Chicopee River

The Department understands that the minimum flow is 237 cfs or inflow if less, that this flow has been established based upon the actual drainage area of the Chicopee River watershed and that the Applicant has filed in 2017 and 2018 documentation with FERC certifying compliance with this minimum flow requirement for 2016 and 2017, respectively. In addition, the Department understands that the Project finalized, filed with the FERC and then received an Order Accepting the Project's Minimum Flow and Impoundment Fluctuation Monitoring Plan in late 2012. We have no record that the Project has operated in non-compliance of the Project's minimum flow since 2011. Based on the foregoing, the Department believes the Project complies fully with its FERC-mandated minimum flow requirement.

Minimum Flows of Red Bridge Impoundment and/or Tailrace to the confluence with the bypassed reach and the Chicopee River

The Department is unaware of any minimum flow requirement for Red Bridge impoundment or the tailrace to the confluence with the bypassed reach and the Chicopee River. Accordingly, the Department expresses no position on these ZoEs' minimum flows and any such associated requirements for these ZoEs

If you have any questions, please contact me at 508-767-2854.

Sincerely,

Robert Kubit, P.E.
MA Department of Environmental Protection
8 New Bond Street
Worcester MA 01606
robert.kubit@state.ma.us