

REVIEW OF APPLICATION FOR CERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE OF THE CHICOPEE VALLEY AQUEDUCT FISH HATCHERY HYDROELECTRIC FACILITY

Prepared by Patricia McIlvaine

December 20, 2016

I. INTRODUCTION

This report reviews the application submitted by the Massachusetts Water Resource Authority (MWRA) or applicant in May 2016 to the Low Impact Hydropower Institute (LIHI) for Low Impact Hydropower Certification for the Chicopee Valley Aqueduct (CVA) Fish Hatchery Hydroelectric Project (CVA Fish Hatchery Project or Project). A review of the application was made by the Reviewer. In addition to preparing an Intake Review Report, a consultation call was completed on May 23, 2015 between the Applicant, LIHI's Executive Director and the Reviewer to address some questions about the Project. The response to the Intake Review was provided in the form of a revised Application on September 26, 2016. This certification review was conducted in compliance with LIHI's Handbook, 2nd Edition, dated March 7, 2016.

The CVA Fish Hatchery Project is a conduit hydropower project that will utilize a newly constructed pipeline from the existing Chicopee Valley Aqueduct (CVA) that supplies public drinking water from the Quabbin Reservoir. The purpose of the new pipeline is to provide water to the State of Massachusetts McLaughlin Fish Hatchery to resolve a long-standing concern with the Hatchery's current source water arrangement. A single turbine/generator unit, with an approximate installed capacity of 60 KW with an estimated average annual generation of approximately 447,000 kWh, will be installed in 2017. As confirmed by the applicant in an email on October 6, 2016, the pipeline would be constructed even if the turbine were not installed. The new pipeline and powerhouse is currently under construction. The Project is expected to be operational in May 2017.

II. PROJECT'S GEOGRAPHIC LOCATION

The powerhouse associated with this Project is located at the MWRA's Water Disinfection Facility (WDF) located on a 2.96-acre site in Ware, MA, immediately west of the CVA. The existing CVA flows south from the Quabbin Reservoir and delivers water to Chicopee, Wilbraham, and South Hadley. The Quabbin Reservoir, located in north-central MA, just east of Amherst, is the largest inland body of water in Massachusetts. It was built between 1930 and 1939, and serves as the primary water supply for Boston and a number of communities in Greater Boston. Figures 1 and 2 in Appendix A illustrate the location of the CVA, the new pipeline (conduit), future powerhouse as well as Quabbin Reservoir.

III. PROJECT AND IMMEDIATE SITE CHARACTERISTICS

The project consists of an approximately 4,700-foot long, 20-inch diameter pipeline from the Massachusetts Water Resources Authority's (MWRA) Chicopee Valley Aqueduct to the Division of Fish and Wildlife's (DFW) McLaughlin Fish Hatchery (MFH), and a powerhouse housing a single turbine. The primary purpose of the pipeline is to convey six million gallons per day (gpd) of cold, high quality water to be used by the MFH for its fish rearing process. Prior to reaching the hatchery, the pipeline will convey the water through a 60-kilowatt (kW) hydroelectric turbine generator located in a 20-foot by 30-foot powerhouse at the MWRA's Ware Disinfection Facility site. At the Hatchery, the pipeline discharge point will be a concrete tank where water would be mixed with water withdrawn from the Hatchery's onsite wells. The power produced will be distributed through the electrical grid and generate income for the MWRA. Currently, a Francis turbine is planned.

The project pipeline travels through undeveloped land. The Ware Disinfection Facility is a 2.96-acre site. The site plan on Figure 3 in Appendix A illustrates the location of the powerhouse on the WDF site.

IV. ZONES OF EFFECT

One Zone of Effect (ZOE) has been identified for this Project which starts at the junction of the 20-inch pipeline with the 48-inch CVA and ends at the Fish Hatchery.

V. REGULATORY AND COMPLIANCE STATUS

The CVA Fish Hatchery Project was approved by FERC as a Qualifying Conduit Facility pursuant to section 30(a) of the Federal Power Act (FPA), 16 U.S.C. § 823a (2012), as amended by Section 4 of the Hydropower Regulatory Efficiency Act of 2013, Pub. L. 113-23, § 4a, 127 Stat. 493 (2013). This approval, issued on January 8, 2014, states the Project meets the qualifying criteria under FPA section 30(a), and is not required to be licensed under Part I of the FPA. A Water Quality Certification was not required for the Project.

The Project was required to undergo review under the Massachusetts Environmental Policy Act (MEPA) (M.G. L. c. 30, ss. 61- 621) and required submission of an Environmental Notification Form (ENF) pursuant to 301 CMR 11.03(4)(b)(2). The ENF is required because the Project is being undertaken by a State Agency and requires a new withdrawal or expansion in withdrawal of 500,000 or more gpd from a water supply system above the three-year average system-wide actual withdrawal volume. On September 5, 2014, a Certificate was issued by the Executive Office of Energy and Environmental Affairs to MWRA finding that the project did not require the preparation of an Environmental Impact Report. The Certificate stated “the ENF has sufficiently defined the nature and general elements of the project for the purposes of MEPA review and demonstrated that the project's environmental impacts will be avoided, minimized and/or mitigated to the extent practicable. Based on the information in the ENF and after consultation with State Agencies, I find that no further MEPA review is required at this time.”

On August 26, 2014, the MA Department of Environmental Protection found that no MADEP permits were required for construction/operation of the pipeline and generating facility.

VI. PUBLIC COMMENT RECEIVED OR SOLICITED BY LIHI

The deadline for submission of comments on the LIHI certification application was December 18, 2016. One comment letter was received and is contained in Appendix B. This letter was from the MA Division of Fish and Wildlife, who supported LIHI certification of the Project.

Due to the very recent issuance of all agency project approvals (in 2015 or 2016), the lack of operational history at this time, the lack of questions about the facility, along with the fact that only one comment letter was received which supported certification, I determined that there was no need to conduct additional outreach to resource agencies to assess LIHI criteria compliance.

VII. SUMMARY OF COMPLIANCE WITH CRITERIA

The following matrix summarizes the standards selected by the Applicant as applicable to this Project. Only one Zone of Effect is applicable for this Project. The Reviewer found that these standards are appropriate, sufficient supporting data was provided, and this data demonstrated compliance with the criteria and standard selected. Details of compliance with the criteria are presented in Section IX.

Criterion		Standards Selected				
		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>Plus</i>
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				

VIII. GENERAL CONCLUSIONS AND REVIEWER RECOMMENDATION

Based on my review of information submitted by the applicant, I believe that this project meets the requirements of a Very Low Impact facility and should be certified for a ten-year period. Under current LIHI policy, the certification term of pre-operational facilities, such as this one, will begin when the plant begins generation. It shall also be noted that LIHI may suspend or revoke the certification should the impacts of the facility, once operational, cause non-compliance with the certification criteria.

THE CVA FISH HATCHERY PROJECT MEETS THE LIHI CRITERIA FOR CERTIFICATION AS A VERY LOW IMPACT FACILITY

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:

Of the following possible alternative Standards, the Applicant has selected and demonstrated compliance with **Standard A-1, Not Applicable/De Minimis Effect** to pass the Ecological Flow Regimes criterion. This standard requires:

“STANDARD A-1. Not Applicable/De Minimis Effect: The Facility operates in a true run-of-river operational mode and there are no bypassed reaches or water diversions associated with the Facility; or the facility is located within an existing water conduit that does not discharge into natural waterways.”

CVA Fish Hatchery Project is located within an “existing” water conduit that does not discharge into natural waterways. While technically the conduit does not yet physically “exist”, I have interpreted the term “existing” to nonetheless apply as the intent of the conduit is to provide water to the Fish Hatchery. Installation of a turbine using flow through this conduit is a secondary consideration.

The water source for the CVA Fish Hatchery Project is the Chicopee Valley Aqueduct (CVA). The CVA draws water from the Quabbin Reservoir, which is one of two source reservoirs for the MA Water Resources Authority’s water supply system. The water that will flow through the new conduit will be approximately 6 mgd, 9 cfs, which represents only 3% of MWRA’s total water supply withdrawals from its source reservoirs.

The new pipeline from the CVA will discharge to the Fish Hatchery’s process water concrete tank. At the Fish Hatchery discharge point, the water will be mixed with water withdrawn from the Hatchery’s four on-site before distribution to a series of linear raceways serving the fish hatchery.

This Project 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 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

Of the following possible alternative Standards, the Applicant has selected and demonstrated compliance with **Standard B-1, Not Applicable/De Minimis Effect** to pass the Water Quality criterion. 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).”

The facility is a conduit facility and does not alter water quality characteristics above or below the facility. The conduit hydropower facility is fed “raw water” (prior to treatment) off the CVA, from a Class A water supply system (Quabbin Reservoir). The water is used at the Fish Hatchery where it is continuously sent through the raceways to maintain water quality characteristics, including dissolved oxygen and proper temperature appropriate for hatchery use. (Water used in the Hatchery’s operations will continue to be discharged to the Swift River as it occurs today.) No physical, chemical, or biotic water characteristics are changed that would impact fish and wildlife resources or human water uses.

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** to pass the Upstream Fish Passage criterion. 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.”

The facility is a conduit hydropower facility associated with a water supply aqueduct/pipeline. The conduit is a manmade structure, not on a river, does not create a barrier to upstream passage, nor are there any migratory fish be affected by use of the water flowing through the conduit.

This Project 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** to pass the Downstream Fish Passage and Protection criterion for the Project. 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.”

As noted above, the conduit supplying the turbine is a spur off a water supply aqueduct/pipeline that does not create a barrier to downstream fish passage, nor are there any migratory or riverine fish expected to be impacted by use of the water flowing in the conduit.

The Project 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

Of the following possible alternative Standards, 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.”

The conduit hydropower project will be located on the grounds of an existing water treatment plant. The powerhouse will be constructed in an already disturbed and cleared area. The site consists of a treatment plant building, bituminous concrete pavement encircling the building, with a number of vaults for metering, treatment, flow control, and testing. The CVA itself has an associated clear right-of-way. There are no land at the CVA Fish Hatchery Project that has 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.

While not technically part of the CVA Fish Hatchery Project under LIHI review, it is noted that the area surrounding the Project is part of the Quabbin Park. The Quabbin Reservoir is protected, with 66 % of the watershed lands that surround it being controlled by the MA Department of Conservation and Recreation, Division of Water Supply Protection. The State’s Watershed Protection Act also controls activities in the watershed.

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

Of the following possible alternative Standards, 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.”

There are no threatened and endangered species within the project site. However, the portion of the pipeline to be installed along Route 9 is located within Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife mapped for the Wood Turtle (*Glyptemys insculpta*), a Species of Special Concern as noted in the ENF filed by MWRA. The Certificate issued by the Executive Office of Energy and Environmental Affairs, following review conducted under the Massachusetts Environmental Policy Act, found that the Wood Turtle would be unaffected by the proposed conduit facility. MWRA has incorporated the suggested mitigation measures into its construction program for the hydropower facility and associated pipeline that will prevent impacts during construction.

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

F. 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. This standard requires:

“STANDARD G-1. Not Applicable/De Minimis Effect: There are no cultural or historic resources present on facility lands that can be potentially threatened by construction or operations of the facility, or facility operations have not negatively affected those that are present, either recently or in the past. “

As stated in their letter dated April 29, 2015, the Massachusetts Historical Commission reviewed the project and determined that the project will have no adverse impact on cultural or historic resources.

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-1, Not Applicable/De Minimis Effect** to pass the Recreational Resources criterion for the Project. This standard requires:

“STANDARD H-1. Not Applicable/De Minimis Effect: The facility does not occupy lands or waters to which the public can be granted access and does not otherwise impact recreational opportunities in the vicinity of the facility.”

The conduit facility is located on the grounds of MWRA’s Water Disinfection / Water Treatment Facility. Due to the critical nature of MWRA’s water supply infrastructure, the treatment plant facility is a secure, fenced in area where public access is not allowed. The pipeline ROW likewise does not provide public recreational opportunities.

The Project Passes Criterion H – Recreational Resources

Appendix A
Figures

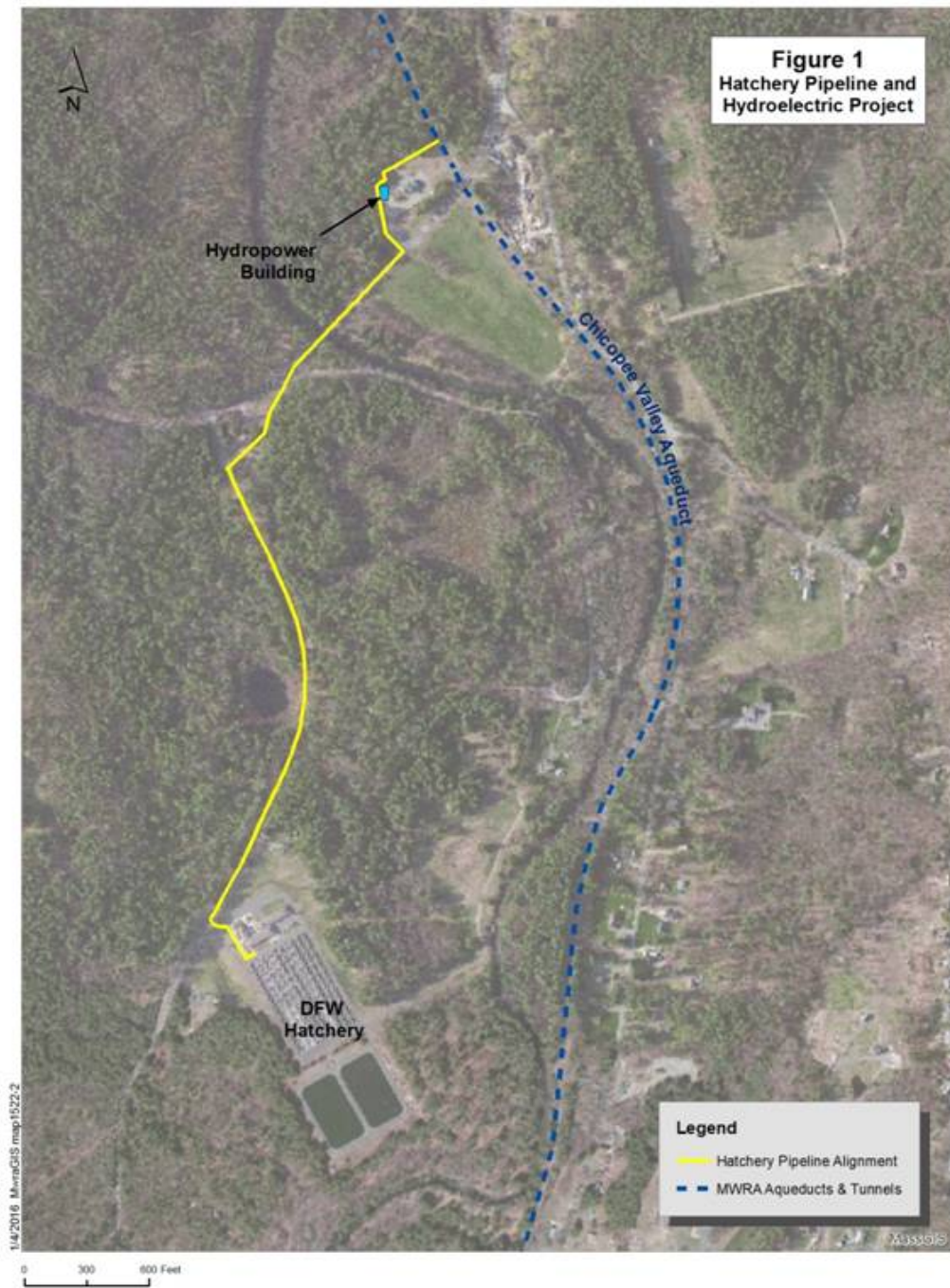


Figure 1
Map illustrating location of the powerhouse and project pipeline from the CVA to the Fish Hatchery



Figure 2

Map illustrating the location of the Quabbin Reservoir and Chicopee Valley Aqueduct

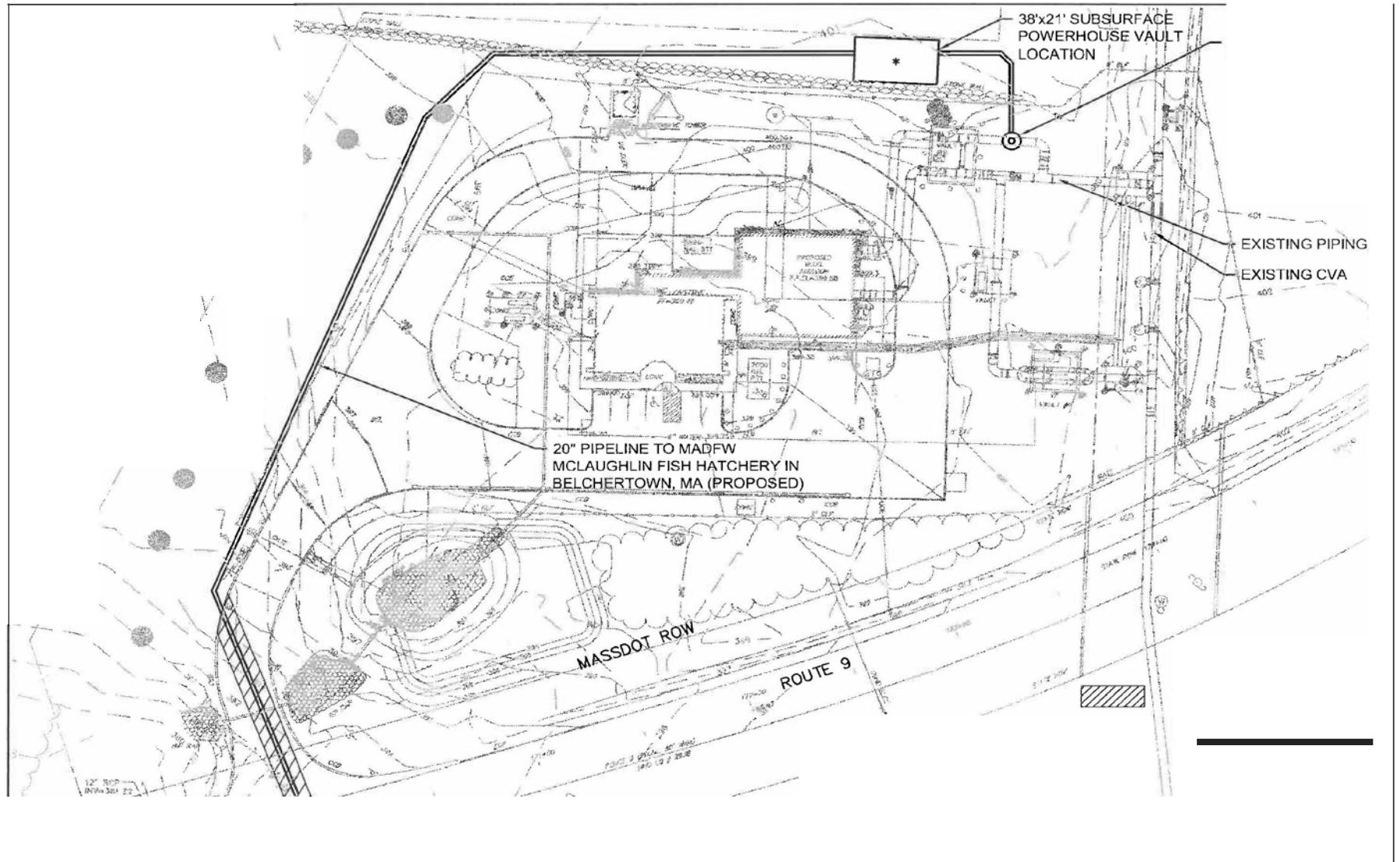


Figure 3
Site Plan

Appendix B
Correspondence



MASSWILDLIFE

**DIVISION OF
FISHERIES & WILDLIFE**

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Jack Buckley, *Director*

October 21, 2016

Dana Hall, Deputy Director
Low Impact Hydropower Institute
PO Box 194
Harrington Park, NJ 07640

RE: Chicopee Valley Aqueduct Fish Hatchery Project (FERC No. CD14-8-000)

Dear Ms. Hall:

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 certification of the Chicopee Valley Aqueduct (CVA) Fish Hatchery Project located in Ware, 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.

PROJECT

The CVA Fish Hatchery Project is a conduit hydropower facility that is associated with a 4,700 foot-long pipeline that is being constructed off of the MWRA’s existing CVA pipeline that will terminate at the MA Department of Fisheries and Wildlife McLaughlin Fish Hatchery. The project is rated at 0.65 MW and will generate approximately 427 MWh annually.

COMMENTS

Operation of the project will result in an additional 6 mgd withdrawal from the Quabbin Reservoir, an insignificant amount from this 412 billion gallon reservoir. Additionally, this flow will be added to the Swift River daily flow as the water will be discharged to the river after it flows through the fish hatchery.

The DFG has no objection to certification of the Chicopee Valley Aqueduct Fish Hatchery Project as a “Low Impact” facility.

Thank you for this opportunity to comment.

Sincerely,

Caleb Slater, Ph.D.
Anadromous Fish Project Leader

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