

## 2) Massachusetts Water Quality Certificate



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

# Department of Environmental Protection

One Winter Street, Boston, MA 02108 • 617-292-5500

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**Water Quality Certification**  
**Crocker Dam Hydroelectric Project**  
**FERC License No. 13237**  
**BRPWW11**

**Applicant: Whitman River Dam, Inc.**

### INTRODUCTION

In June 2008, the **Whitman River Dam, Inc.**, (Project Owner), submitted to the Federal Energy Regulatory Commission (FERC) an Application for a Preliminary Permit for the Crocker Hydroelectric Project (Project No. **13237**), a **Minor** Project of less than **1.5 MW** Capacity located at an existing dam on the **Whitman River** in the **Nashua River** watershed in Westminster, MA. The Project Owner submitted an application for Water Quality Certification (Certification) to the Massachusetts Department of Environmental Protection (**MassDEP**) on August 2, 2010.

### PROJECT DESCRIPTION

The proposed project will be located at the Crocker Pond Dam which is a restored earthen embankment and masonry dam. Originally built in 1933, the dam crest is approximately 10 feet wide and is grass covered. The upstream side of the dam is protected riprap while the downstream side is grass covered. The dam has a reinforced concrete core wall.

As stated in the Certification application, the existing Crocker Hydroelectric Project consists of:

1. a 520 foot long, 38.5 foot high earthen embankment dam with a reinforced concrete core and a 120 foot long arched ogee concrete spillway;
2. a 105 acre reservoir;
3. a manually operated 8 foot by 12 foot intake gate;
4. a manually operated 3 foot by 3 foot mud gate;
5. 2 feet of wooden flashboards are normally used along the crest of the spillway;

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6. a brick gatehouse containing two outlets: a 42-inch diameter-steel penstock controlled by a wooden outlet gate and a 24-inch diameter auxiliary low-level outlet controlled by a cast iron sluice gate;
7. the head pond has a maximum storage of 1835.0 acre-feet and 1027.0 acre-feet of storage at a normal pond level;
8. the drainage area of the Project is 20.0 square miles;
9. head of the dam is 38.5 feet with the top of boards given at reference elevation (local datum) of **124.6** feet, tail water is at elevation 86.1

The applicant proposes to construct a new powerhouse of precast construction on the upstream side of the access bridge located downstream of the dam on the left side of the river. Water will be supplied to the new powerhouse by extension of the existing 42-inch diameter stainless steel **penstock**. The penstock will be connected to a Kaplan turbine with an integral synchronous generator. Studies of the site will determine whether the turbine will be vertical or horizontal. The turbine has **been** tentatively sized at 100 KW with an estimated annual energy output of 607,000 **kWh**. There is an existing 4160 V National Grid distribution circuit on South Ashburnham **Road** approximately 300 feet from the location of the proposed powerhouse.

Controls systems will be provided so that operation of the machine will be controlled by head pond level and will follow the elevation of head pond so that it will perform as a run of river installation.

The applicant owns the water rights at the Crocker Dam and the two next upstream dams as well. Significant repair work has been completed on the Crocker Dam under the oversight of the Massachusetts Department of Conservation and Recreation, Office of Dam Safety.

#### **IMPACTED RESOURCES**

The Crocker Dam Hydroelectric Project is located within the North Nashua **River** watershed. Segment **MA81-11** on the **Whitman River** in Westminister, Massachusetts. 314 **CMR** 4.06 of the Massachusetts Surface Water Quality Standards (**Standards**) classifies this **segment** as a Class B, Warm Water Fishery. However fish sampling during the summer of 2010 indicates reproducing trout are present downstream of the Crocker Dam. The Standards will be updated to classify this segment as a Cold Water Fishery.

Crocker Pond comprises an area of approximately 105 acres. The normal pool storage is approximately 1,027 acre-feet, while the maximum pool storage is 1,835 acre-feet. Head at **the** dam is 38.5 feet with the top of the hoards given at reference elevation (local datum) of **124.6** feet. The tail water level is 86.1 **feet**. The depth of the impoundment is approximately 25 feet at the dam.

The **Whitman** River was dammed in 1933 to form Crocker Pond, a water supply that historically served the Crocker Paper Company and its predecessors for manufacturing purposes. Current downstream water uses include paper manufacturing and hydropower generation.

The contributing watershed to Crocker Pond is approximately 20.33 square miles and includes **the** **Whitman** River, Muddy Pond, **Whitmanville** Reservoir, Lake Wampanoag, Whitney Pond and several unnamed perennial and intermittent streams. The watershed includes portions of Westminister, Ashburnham and **Gardner**, Massachusetts.

The **Whitman** River begins at the outlet of Lake Wampanoag **and** terminates in Snow **Mill's Pond** in **Fitchburg**, MA at the confluence of the North Nashua River. **The** river is approximately 6.7 miles in length.

According to the Massachusetts Natural Heritage and Endangered Species Program Atlas, 13<sup>th</sup> edition, effective October 1, 2008, and the **MassGIS** online mapping (data updated October 2008), no proposed work will occur within designated Priority Habitats of Rare Species or Estimated Habitats of Rare Wildlife.

The proposed bypass reach is approximately 140 feet long consisting of bedrock ledge and large boulders.

#### APPLICABLE LAW

The Massachusetts Clean Waters Act (State Act), G.L. c.21, §§ 26-53, delegates responsibility for enhancing the quality and value of water resources within the Commonwealth to MassDEP. The State Act directs MassDEP to take **all** action necessary or appropriate to secure to the Commonwealth the benefits of the Federal Clean Water Act, 33 U.S.C. §§1251-1387 (Federal Act). The main objectives of the **Federal** Act are to restore and maintain the chemical, physical and **biological** integrity of the nation's waters. To meet these objectives, MassDEP adopted the Massachusetts Surface Water Quality Standards, 314 CMR 4.00. The **Standards** classify each body of water within the Commonwealth: designate the most sensitive uses to be enhanced, maintained **and** protected for each class; prescribe minimum water quality criteria required to sustain **the** designated uses; and contain regulations necessary to achieve **the** designated uses and maintain **existing** water quality **including, where** appropriate, the prohibition of discharges into waters of the Commonwealth.

314 CMR 4.06 (5), Figure 17 **and** Table 17 classify the **Whitman** River as a Class B water for its entire **length** in Massachusetts. All Class B waters are designated as habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation (314 CMR 4.05(3)(b)). Class B waters shall also be suitable for irrigation and other agricultural uses, and for compatible industrial cooling and process uses. Class B **waters** must also consistently exhibit good aesthetic quality (314 CMR 4.05(3)(b)). The minimum criteria applicable to Class B waters are listed within 314 CMR 4.05(3)(b). Additional minimum criteria **applicable** to all surface waters are listed within 314 CMR 4.05(5). The antidegradation provisions of 314 CMR 4.04 at minimum require protection of all existing and designated uses of water bodies, and maintenance of the level of water quality needed to **protect** those uses.

As a result of fish sampling **during** the summer of 2010, reproducing trout were discovered downstream of the Crocker Dam. **This** section of the **Whitman** River **will** therefore be designated a cold water fishery in a **future** Water **Quality** Standards update. Cold water fishery dissolved oxygen standards are used for this water **quality** certification.

#### CERTIFICATION PROVISIONS

1. MassDEP APPROVES the application of **Whitman** River Dam, Inc. and CERTIFIES that there is reasonable assurance that the Crocker Hydroelectric Project, as described above and subject to **the** conditions below, **can** be constructed and operated in compliance with the applicable provisions of §303 of the Federal Act, 33 U.S.C. § 1313.
2. This Water Quality Certification shall become a condition on the FERC **License** issued to the Project Owner.
3. **This Certification** shall become effective on the date that the **license** issued for the Project by FERC becomes effective.

4. The state and federal resource agencies referred to in this Certification include the MassDEP, the Massachusetts Department of Fisheries and Wildlife (MADFW), and the U.S. Department of the Interior, Fish and Wildlife Service (USFWS).
5. The Project shall be operated by the Project Owner in accordance with the conditions contained in this Certification and the information included in the FERC license application. Any modifications made to the FERC application during the licensing process that would have a significant or material effect on the conclusions or conditions contained in this Certification, as determined by MassDEP, must be submitted to MassDEP for prior review and approval.
6. The Project shall be operated to maintain the existing and designated uses of the **Whitman** River as outlined in the Standards at **314 CMR 4.00**, and to maintain an integrated and diverse biological community within the **Whitman** River.
7. The **Project** Owner shall obtain and comply with all applicable federal, state and local licenses, permits, authorizations, conditions, agreements and orders required for the construction and operation of the project in accordance with the terms of this Certification.
8. All activities shall be conducted in compliance with the Massachusetts Wetlands Protection Act, including the Rivers Protection Act, G.L. Chapter 131, Section 40, and the implementing regulations at **310 CMR 10.00**. A Water Quality Certification shall be obtained from MassDEP prior to initiating any activity that will cause a discharge subject to ~~§404~~ of the federal Act, 33 U.S.C., ~~§1344~~. The Project Owner shall comply with all applicable provisions of the Public Waterfront Act, G.L. c. 91, and the implementing regulations at **310 CMR 9.00**.
9. Prior to beginning any construction on the Project, the Project Owner shall submit a plan to monitor and control erosion during construction activities to keep impacted waters free from turbidity in **concentrations** that are aesthetically objectionable or would impair any designated **use(s)** of such waters. The Project Owner shall implement the plan **as** approved by MassDEP.
10. All construction, maintenance and repair activities, including disposal of debris and removal of sediments in impounded areas, shall be conducted in a manner so as not to impair water quality, and pursuant to and in compliance with any required approvals.
11. MassDEP may request, at any time during which this Certification is in effect, that FERC reopen **the** license to make modifications MassDEP deems necessary to maintain compliance with the Standards at **314 CMR 4.00**, or other appropriate requirements of state law.
12. MassDEP reserves the right to add and alter the terms and conditions of this Certification when authorized by law, and as it deems appropriate to carry out its responsibilities during the life of the Project with respect to water quality and the protection of the existing and designated uses of the waters of the Commonwealth.
13. The Project Owner shall operate the project in a run-of-river mode such that inflow to the project equals outflow from the project on an instantaneous basis and fluctuations of the head pond water level are minimized. **This** operating **regime** may be temporarily modified by approved maintenance activities, agreement between the Project Owner and appropriate state **and/or** federal resource agencies, or by extreme hydrologic conditions or emergency electrical system conditions, as these terms are defined below.
14. "Extreme Hydrologic Conditions" signifies the occurrence of events beyond **the** Project Owner's control including without limitation, abnormal precipitation, extreme runoff, flood conditions, ice conditions or other hydrologic conditions which render the operational restrictions

and requirements contained within this Certification impossible to achieve, or are inconsistent with the safe operation of the Project.

15. "Emergency Electrical System Conditions" signifies operating emergencies beyond the Project Owner's control which require changes in flow regimes to eliminate such emergencies including without limitation, equipment failure or other abnormal temporary operating condition, generating **unit** operation or third-party mandated interruptions under power supply emergencies, and orders **from** local, state or federal law enforcement or **public** safety authorities.

16. During **refilling** of the project reservoir **after** dam maintenance or emergency drawdown, the Project Owner shall operate the project such that **90%** of inflow to the project is released below the project and the impoundment is refilled on the remaining **10%** of inflow.

17. Within three months of completion of turbine installation at the dam, or upon such other schedule established by FERC, the Project Owners shall, submit a plan for monitoring run-of-river operation including pond level and flow **releases** from the Project to MassDEP for approval. **The** plan shall **include:** a description and design of the mechanisms and structures that will be used; a description of periodic **maintenance and/or** calibration that will be conducted to ensure these mechanisms **and** structures **work properly**; a description of the method used to record project **operation** data for verification of proper operations and minimum flow releases; and a description of the manner in which data will be maintained for inspection by MassDEP and the state and federal resource agencies. The Project Owner shall consult with the state and federal resource agencies in developing **these** plans, shall respond to all agency comments, and **shall** include agency comment letters when submitting the plans to MassDEP for approval. The Project Owner shall provide the state and federal resource agencies **with** at least thirty days to respond to a draft plan before it is submitted to MassDEP for approval. The Project Owner shall implement the plan as approved by MassDEP.

18. Within three months of completion of turbine installation at the dam, the Project Owner shall **submit** a plan of operations to insure dissolved oxygen levels in the **Whitman** River remain **above** 6 mg/l at all times. Operations shall include at a minimum, monitoring dissolved oxygen and temperature at stations **South1** and **South2** (identified during summer 2010 sampling) **upon** turbine discharge and during any adjustments necessary to maintain the 6 mg/l standard. Adjustments could include providing continuous spill during the summer months (July – September) or improving aeration at the outlet, if needed. **The** Project Owner shall consult with the state and federal resource agencies in developing this plan, **shall** respond to all agency comments, and shall include agency comment **letters** when submitting the plans to MassDEP for approval. The Project Owner shall provide the state and federal resource agencies with at least thirty days to respond to a draft plan before it is submitted to MassDEP for **approval**. The Project Owner shall implement the plan as approved by MassDEP.

19. Within one year of the effective date of this Certification, or upon such other schedule established by **FERC**, the Project Owner shall install full-depth, one **inch** clear trash racks with velocities less than or equal to two feet per second ( $\leq 2$  **fps**) at the intakes to reduce impingement and entrainment of fish at the Project.

20. MassDEP reserves the right to prescribe upstream and downstream eel passage facilities and operations when determined necessary by the MADFW.

21. MassDEP **reserves** the right to prescribe upstream and downstream **anadromous** fish passage **facilities and** operations when **determined necessary** by the MADFW.

22. **The Project** Owner shall maintain a minimum flow in the bypass reach sufficient to maintain water quality standards at all times.

23. The Project Owner **shall** allow any employee, agent, consultant, contractor or authorized representative of MassDEP or MADFW to enter the facilities in order to assess compliance with the terms and conditions of this Certification including, but not limited to, **entry** for the purposes **of:** (i) investigating, sampling, inspecting, or photocopying documents or other writings, conditions, equipment, practices or property; (ii) interviewing facility personnel and contractors; (iii) making records of **field** activities; and (iv) observing any activities undertaken at the facilities under any of the provisions of this Certification.

24. If any event occurs which delays or will delay the Project Owner's **performance** of work beyond a deadline established by or pursuant to **this** Certification, which event was beyond the reasonable control and without the fault of the Project Owner or any person or entity subject to the Project Owner's control, and which event could not have **been** prevented or avoided by the exercise of due care, foresight, or due diligence on the part of the Project Owner (a "force majeure event"), then the time for performance shall be extended for an appropriate period of time, as determined by MassDEP in its sole discretion. The Project Owner shall bear the burden of demonstrating that a force majeure event has occurred or will occur, and that the delay was beyond the reasonable control and without the fault of the Project Owner. Such an extension of time must be in writing to have effect.

25. Submissions under this Certification shall be sent to:

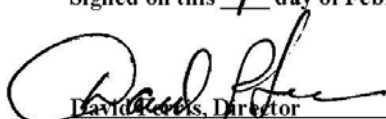
MassDEP: Massachusetts Department of Environmental **Protection**  
Division of Watershed Management  
Central Regional **Office**  
627 Main Street  
Worcester, MA 01608  
(508) 767-2854; FAX (508) 791-4131

Massachusetts Department of Environmental Protection  
Bureau of Resource Protection  
Central Regional Office  
627 Main Street  
Worcester, MA 01608  
(508) 767-2728; FAX (508) 839-4035

**MADFW:** Massachusetts Division of Fisheries and Wildlife  
Field Headquarters  
Assistant Director of Fisheries  
**1 Rabbit Hill Road**  
Westborough, MA 01581  
(508) 389-6331; FAX (508) 389-7890

USFWS: United States Fish and Wildlife Service  
New England Field Office  
Attention: Supervisor  
70 Commercial Street, Suite 300  
Concord, NH 03301-5087  
(603) 223-2541; FAX (603) 223-0104

Signed on this 4 day of February, 2011.



David Lewis, Director

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Wastewater Management Program  
Department of Environmental Protection