

APPENDIX A

INDIAN ORCHARD PROJECT

Flows

The Facility is in compliance with resource agency recommendations issued after December 31, 1986 regarding flow conditions for fish¹⁶ and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations) for both the reach below the tailrace and all bypassed reaches.

Section 30(c) of the Federal Power Act and Section 408 of the Energy Security Act required the inclusion in the Indian Orchard exemption from licensing, all terms and conditions that are prescribed by state and federal fish and wildlife agencies to prevent loss of, or damage to fish and wildlife resources.

With respect to minimum flow at the Indian Orchard Project, the FWS specifically mandated the following conditions:

- The Exemptee agreed to release continuously a minimum flow of 247 cfs, or inflow to the project, whichever is less, at the project dam to the bypass reach.
- The FWS reserved the right to add and/or alter these terms and conditions as appropriate in order to carry out its responsibilities with respect to fish and wildlife resources. The Exemptee agreed, within 30 days of receipt, to file with the Commission any additional or modified mandatory terms and conditions.
- The Exemptee agreed to operate the project to limit drawdown of the Project impoundment to no more than one foot below the top of the flashboards except during system emergencies or energy audits.¹⁷
- The Licensee [Exemptee] agreed, within six months from the date of issuance of the exemption from licensing for the Project, present to the FWS for approval, a plan for monitoring project impoundment level and instantaneous bypass releases. Following approval of the plan, the Exemptee agree to measure and record impoundment level and flows according to the plan and provides records of these data to the FWS within 30 days from a request for the records.

¹⁶ Unless noted otherwise all references to “fish” automatically refer to both “fish and eels.” FWS, MDEP and MDFW were specifically asked to address their comments on fish issues to include eels in their responses. For the Putts Bridge Project (the immediate upstream dam), each agency was also specifically asked to verify in writing that their comments covered both fish and eels. Each agency responded affirmatively.

¹⁷ Id.

- The Exemptee agreed to incorporate the aforementioned fish and wildlife conditions in any conveyance; by lease, sale or otherwise; of its interests so as to legally assure compliance with said conditions for as long as the Project operates under an exemption from licensing.

The amount of minimum flow and drawdown from the top of the flashboards at Indian Orchard Project has been impacted by changes made to operations at the Putts Bridge Project. During a June 22, 1999 meeting, FWS requested evidence that operation of the Putts Bridge Project does not impact the minimum flow release at the downstream Indian Orchard Project. In response to FWS concerns, CEEI filed on December 6, 1999, calculation tables on pond fluctuations permitted by the exemptions. Based on the results, it appears that the pond level control at the Indian Orchard Project should be set at 6 inches during the spring period. This measure would provide sufficient storage to permit the continuous discharge of the minimum flow at the Indian Orchard Project. Therefore, CEEI indicated in a December 6, 1999 letter, that it plans to operate the upgraded units within the head pond restrictions such that the total outflow from the Putts Bridge Project (i.e., the turbine discharge plus the 25 cfs minimum flow) is adequate to maintain the 247 cfs minimum flow requirement at the Indian Orchard Project.

On January 27, 2000, FWS requested evidence that the reduced flow to the bypass reach at Putts Bridge would not also create unacceptable water quality at Putts Bridge. To that end, FWS required that a water quality study be performed in order to verify that a flow of 25 cfs will protect water quality in the bypass reach. FWS also conditioned its approval on the study taking place during the summer. On June 7, 2000, after incorporating comments from FWS, MDFW and MDEP, CEEI released its Putts Bridge Bypass Water Quality Study Plan. Over a sixty-day period (between July 7 and September 6, 2000), the water was sampled at three points downstream of the dam. Data collected during the water quality monitoring plan indicated that D.O. concentrations and water temperatures in the Putts Bridge bypass reach exceeded MDEP Class B water quality standards.¹⁸ As such, it was concluded that the minimum flows at Putts Bridge, as released by the electronically operated skimmer gate at the dam, are sufficient for maintaining adequate water quality in the Putts Bridge bypass reach. In addition, since then CEEI operates the Indian Orchard Project with a year round drawdown of 6 inches from the top of the flashboards and with a minimum flow of 247 or inflow, if less.

To date, the Exemptee has not been notified by the FWS, MDEP or MDFW of the need to modify, increase or decrease its drawdown from the top of its flashboards or minimum flow at Indian Orchard Project.

The Indian Orchard Project consists of a dam site located on the Chicopee River. The 18-mile long Chicopee River originates at the confluence of the Ware¹⁹ and Quaboag Rivers, 10.2 miles upstream, and discharges into the Connecticut River 7.8 miles downstream of the

¹⁸ According to the MDEP, the Chicopee River is classified as class B water and is listed as a warm water fishery. This classification requires that dissolved oxygen levels shall not be less than 5.0 mg/L and that levels of dissolved oxygen shall not be lower than 60 percent in warm water fisheries. Water temperature shall also not exceed 28.3°C in warm water fisheries.

¹⁹ The Swift River joins with the Ware River less than a mile above the merger of the Ware River with Quaboag River.

project area at Springfield, Massachusetts. The following flow parameters are extrapolated from 53 years of United States Geological Survey (“USGS”) (1929-1982) records from hydrologic gaging station No. 01177000, located on the Chicopee River at Indian Orchard, Massachusetts, located approximately 0.6 miles downstream of the Indian Orchard dam site. The drainage area at this gage is 689 square miles and the drainage area at the hydropower project site is 687 square miles. The mean annual flow at the project is 911 cfs (914 cfs at the gage) with a minimum and maximum historical discharge of 16 cfs, recorded on various dates between 1929 and 1931, and 45,200 cfs, recorded in September 21, 1938, respectively. Additional flow parameters for the Chicopee River related to the project area are as follows:

- high flow: approximately 1,521 cfs (approximately 1,525 cfs at the gage at Indian Orchard); flow exceeded 10 percent of the time;²⁰
- low flow: approximately 224 cfs (approximately 225 cfs at the gage at Indian Orchard); flow exceeded 90 percent of the time;²¹
- 7Q10 flow: 247 cfs (the 7Q10 flow refers to the minimum 7-day average flow rate expected to occur once every 10 years and is based on 0.36 cfs per square mile of drainage area).

The dam creates an average 10.8-foot deep, 74-acre impoundment that is 4,200 foot long, with a normal surface elevation of 161.0 feet USGS datum, normal tailwater elevation of 125.3 feet and average gross head of 35.7 feet.

During the In-take Review for Red Bridge Project, it was discovered that CEEI had not completed the “Minimum Flow and Impoundment Fluctuation Monitoring Plan.” Accordingly, on February 20, 2012, Essential Power, with the concurrence of FWS, MDEP and MDFW, filed with FERC a “Minimum Flow and Impoundment Fluctuation Monitoring Plan” for the Project. On August 3, 2012, FERC issued an order accepting Essential Power’s Minimum Flow and Impoundment fluctuation Monitoring Plan.

In response to questions raised in a December 3, 2013 e-mail by FWS, a telephone conference call was held with representative of FWS and MDFW²² and Essential Power on January 14, 2013. Among other points discussed, Essential Power announced that it would rebuild the Indian Orchard minimum flow discharge. Final design plans would be prepared within three months and circulated for public and agency comment. It is the intention of Essential power to obtain all agency approvals by the start of summer 2013 then to start construction with the goal to complete construction before the start of fall 2013.

In summary, the Exemptee operates the Indian Orchard Project in a limited pond-and-release mode for the protection of water quality, aquatic resources, and aesthetic values in the Chicopee River. This operation may be temporarily modified, if required, by operating emergencies beyond the control of the Exemptee, or for short periods while performing energy audits.

²⁰ See Appendix A-2 for a Flow Duration Curve for the Chicopee River at Indian Orchard.

²¹ Id.

²² MDEP was invited to attend but declined to participate due to scheduling conflicts.