STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JANET T. MILLS
GOVERNOR

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April 17, 2019

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

RE: Comments on the Initial Study Report for the Lowell Tannery Hydroelectric Project (FERC No. 4202)

Dear Secretary Bose:

The Maine Department of Environmental Protection (Department or DEP) reviewed a Pre-Application Document (PAD), submitted on September 26, 2018, and filed comments and study requests on March 12, 2019. The Department also reviewed a Water Quality Study Plan dated June 2019 and attended a Study Plan Meeting on March 27, 2020, organized by Kruger Energy, KEI (USA) Power Management Inc. (Applicant), for the Lowell Tannery Hydroelectric Project (Project) (FERC No. 4202) that detailed the results of those water quality studies and discussed additional studies for the upcoming 2020 field season. Department staff reviewed appropriate Project documents to prepare the following comments and study requests.

As previously noted, the proposed relicensing of the Lowell Tannery Project is subject to water quality certification provisions of Section 401 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act). By Executive Order of the Governor of the State of Maine, the Department is the certifying agency for projects located wholly or partially in organized towns and cities, and as such has jurisdiction over the Project.

The existing Lowell Tannery Project consists of a 230-foot-long, 27-foot-high concrete gravity dam with a crest elevation of approximately 178.8 feet[1] topped with 3.5-foot-high flashboards (for a total of 182.3 feet normal pond elevation), with a principal spillway of 30 feet and an auxiliary spillway of 89 feet, a seven-foot-wide log sluice and a 10-foot-wide tainter gate. The dam impounds a reservoir with a surface area of approximately 68.5 acres at a normal pond elevation. The dam contains a 3-foot-wide Denil fish passage facility and a dedicated downstream fish bypass pipe. A powerhouse integral to the dam contains a single turbine-generator unit with a total generating capacity of 1 MW and an average annual generation of approximately 4,095 MWh. The Lowell Tannery Project operates in a run-of-river mode where upstream water flowing into the project impoundment approximately equals water flowing downstream from the project.

[1] Elevations are provided in feet above mean sea level.

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The Department understands that there are no proposed changes in facilities or operations of the Rollinsford Project at this time.

Comments on the Initial Study Report

The Department appreciates the effort of the Applicant to prepare the Initial Study Report. After review of the available documents, the Department has the following comments on the Initial Study Report:

1. The ISR presents data for three water quality studies, including an Impoundment Trophic State Study, Tailwater Dissolved Oxygen and Water Temperature Study, and a Tailwater Benthic Macroinvertebrate Study, and for a desktop Turbine Blade Strike and Whole Station Survival Study. The Department confines its comments to the water quality studies and defers commentary on the Turbine Blade Strike and Whole Station Survival Study to the fish resource agencies with the expertise and experience to provide meaningful comment.

2. In its comments on the Pre-Application Document for the Lowell Tannery Project, the Department also requested an Aquatic Habitat Cross-Section Flow Study and an Impoundment Aquatic Habitat Study which were not conducted by the Applicant. In lieu of conducting the requested studies, the Department requests the Applicant submit three years of water level and flow data to demonstrate run-of-river operations (ROR), wherein inflow is equal to outflow and impoundment water level fluctuations are limited to one foot. Making a demonstration of ROR operations, along with the impoundment bathymetry measurements requested will provide the data necessary to calculate the impoundment littoral zone and the % wetted area and volume, demonstrating extent of habitat for fish and other aquatic life in the impoundment. Submission of the flow data is expected to demonstrate maintenance of consistent flow and the associated maintenance of the riverine aquatic habitat for fish and other aquatic life downstream of the dam.

3. The ISR does not present impoundment bathymetric data, as request by the Department in its comments on the PAD. Bathymetric data is critical to evaluation of impoundment littoral habitat in lieu of conducting an Impoundment Aquatic Habitat Study, and is again requested, along with water level and flow data to demonstrate attainment of the designated use of habitat for fish and other aquatic life.

4. 2019 Macroinvertebrate Sampling Study. Table 2 of the report appears to contain errors, referring to the location of Passadumkeag Sream in Auburn, Maine. Please review this information as well as the rest of the table and revise as necessary.

Water Quality Studies

Impoundment Trophic State Study – Water quality data was collected at the Lowell Tannery Project between June and October 2019, in accordance with the DEP SAMPING PROTOCOL FOR HYDROPOWER STUDIES (June 2018). Nutrient concentration exceeding those determined by the Department to be acceptable can cause negative environmental impacts to surface waters, such as algal blooms, low dissolved oxygen concentrations, excessive growths of

filamentous algae or bacteria, generation of cyanotoxins or affecting the resident biological community. Project study results indicate nutrient concentrations (phosphorus and chlorophyll-a in the Lowell Tannery impoundment exceed generally acceptable concentrations for Class A waters. Secchi disk transparency measurements ranged from 1.9-2.9 meters; measurements less than two meters can indicate algal growth, especially in the presence of excessive nutrients A single Secchi disk measurement, collected on October 2, 2019, was less than the two-meter threshold demonstrating attainment of Class AA/A water quality standards, however color values are high (85-100 PCU) in the Passadumkeag River at this location, which prevents conclusions being drawn from the Secchi disk transparency measurements or the total phosphorus data. It is important to note that the Department does not apply averaged measurements in determining whether Secchi disk transparency measurements at any project attains or does not attain the threshold criteria. Color values in the range measured at the Lowell Tannery Project interfere with water transparency, and the humic acids responsible for the color can bind with phosphorus, making it biologically unavailable. Humic acids can also contribute to oxygen depression because the reactions that occur when sunlight breaks down these molecules consume oxygen. Dissolved oxygen concentrations in the impoundment failed to attain Maine Water Quality Standards, specifically the minimum criteria of 7 ppm, on 4 of 10 sampling dates (40% of the sampling period).

Impoundment Aquatic Habitat Study – The purpose of this study is to determine the character of the impoundment's littoral zone and the ability of the impoundment to support fish and other aquatic life. The Lowell Tannery Project is operated as a run-of-river facility; therefore, normal operations should not greatly affect the littoral zone. The Department requested that the Applicant establish a bathymetric profile of the impoundment and conduct the impoundment aquatic habitat study following the "Habitat Study" protocol under "Lakes, Ponds, and Impoundments" in the DEP SAMPING PROTOCOL FOR HYDROPOWER STUDIES (June 2018); however, as noted in its comments, above, submission of three years of impoundment water level data will demonstrate the ROR character of the Lowell Tannery operations, and coupled with the requested bathymetric measurements can be used to calculate the % wetted area and volume of the littoral zone and may demonstrate attainment of the designated use of habitat for fish and other aquatic life. The Department again requests bathymetric measurements in the impoundment and three years of impoundment water level and flow data in demonstration of attainment of the designated use of habitat for fish and other aquatic life.

Downstream Temperature and Dissolved Oxygen Study – Temperature and dissolved oxygen monitoring downstream of the Lowell Tannery Dam was requested to demonstrate compliance with Maine's Class AA/A minimum dissolved oxygen criteria of 7 parts per million and 75% saturation. A Dissolved Oxygen and Temperature Study was conducted by the Applicant between June and October 2019, in accordance with the Department's "Temperature and Dissolved Oxygen Study" protocol under "Rivers and Streams" in the DEP SAMPING PROTOCOL FOR HYDROPOWER STUDIES (June 2018). The Department notes that the photo presented in the ISR shows the Hobo data logger near the bank river right, instead of at the quarter point location determined to have the lowest DO measurement, which would have more accurately represented conditions in the river. The Initial Study Report presents the DO monitoring values as well as minimums, maximums, medians and averages for each sample month; results ranged from 6.2 mg/L to 10 mg/L, with percent saturation ranging between 70.9%

and 104.5%. The Study notes that DO concentrations appear to track the concentrations measured in the impoundment during generation, and generally increase when generation stops. The Department requests the Applicant submit an excel spreadsheet of the temperature and DO data to assist its interpretation of Project results.

To show whether the cause is upstream or arises in the impoundment, the Applicant could sample DO above, within, and below the impoundment twice each day (before 8:00am and again in mid-afternoon at each, following the Department's sampling protocol referenced above. The Department must review and approve any such study plan before monitoring begins.

Benthic Macroinvertebrate Monitoring – Assessment of the benthic macroinvertebrate community is critical to determining whether Project operations affect attainment of habitat and aquatic life criteria in the river below the Lowell Tannery dam. As noted above, The Department completed a Benthic Macroinvertebrate Study in the Passadumkeag River in 2016, establishing that the River meets Class A water quality standards upstream of the Lowell Tannery Project. However, a Benthic Macroinvertebrate Study downstream of the dam is necessary to demonstrate that Project operations do not negatively impact habitat and aquatic life. A Benthic Macroinvertebrate Study was conducted in accordance with the DEP METHODS FOR BIOLOGICAL SAMPLING AND ANALYSIS OF MAINE'S RIVERS AND STREAMS (2002, revised April 2014). The study was conducted between August 6 and September 13, 2019; results indicate that the macroinvertebrate community in the vicinity of the Lowell Tannery Dam attains Class A water quality standards after raising an initial finding of Class B, based on lake outlet effect. The report notes, however, that sample retrieval was delayed, and the sampling interval is outside the 28 days (+/- 4 days) prescribed by the Department's sampling protocol. And lastly, the Department notes that the 2019 macroinvertebrate study plan incorrectly states that the statutory class of the Passadumkeag River downstream of the Lowell Tannery Dam is Class A, rather than Class AA. While Class AA and Class A macroinvertebrate criteria are the same, it's important to understand and acknowledge the correct classification standard, in order to interpret sampling results.

Aquatic Habitat Cross-Section Flow Study - This study evaluates whether current in-stream flow releases are affecting attainment of habitat criteria for fish and other aquatic life in the Passadumkeag River downstream of the Lowell Tannery dam. It is the Department's position that there must be both sufficient quality and quantity of habitat for aquatic organisms to meet habitat and aquatic life criteria. The Applicant may demonstrate attainment of habitat and aquatic life criteria at the Project by conducting an Aquatic Habitat Cross-Section Flow Study following the "Habitat and Aquatic Life Studies" protocol under "Rivers and Streams" in the DEP SAMPING PROTOCOL FOR HYDROPOWER STUDIES (June 2018) or, in this case, may submit three years of flow data to demonstrate that ROR conditions, where inflow is equal to outflow, are maintained, demonstrating that Project operations do not adversely impact the volume of water discharged from the Project, and thus maintain riverine aquatic habitat downstream of the Lowell Tannery dam.

Thank you for the opportunity to comment on the Initial Study Report for the Lowell Tannery Project. Please direct any questions regarding these comments to Kathy.Howatt@maine.gov or 207-446-2642.

Sincerely,

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Maine Department of Environmental Protection

cc: Lewis Loon, KEI (Maine) LLC
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