

September 6, 2017

Mr. Gary M. Franc
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Franc Logic
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RE: Low Impact Hydro Institute (LIHI) Certification for Willow Island Hydroelectric Project (FERC no. 6902)

Mr. Franc:

On July 5, 2017, American Municipal Power, Inc. (AMP) submitted an application for LIHI certification of their Willow Island Project (FERC no. 6902). The Willow Island Project is located on the Ohio River within Pleasants County, WV and Washington County, OH in association with the US Army Corps of Engineers' Willow Island Lock and Dam.

The West Virginia Division of Natural Resources, Wildlife Resources Section (WRS) has completed its review of the LIHI application for the Willow Island Hydroelectric Project and offers the following comments with regards to the various criteria that define the LIHI process.

Criterion A – Ecological Flow Regimes

The Willow Island facility operates in run-of-river mode. The WRS considers Willow Island to have met the requirements of standard A-1 of this criterion.

Criterion B – Water Quality

AMP, as a condition of the FERC license, has been monitoring the water quality at the Willow Island facility and files an annual report detailing data collected. For the most part, the hydropower facility at Willow island has maintained a downstream dissolved oxygen (DO) concentration that has exceeded the concentration occurring upstream of the facility. There have been, however, a number of instances in which the downstream DO concentration was below what was present upstream of the facility. In most of these cases, the lower readings had been attributed to faulty devices and were easily remedied by re-calibrating the device or replacing it altogether. Some of the other cases were fixed by relocating the monitoring device as instream activity unrelated to the hydropower project provided sources for the inaccurate readings. Still, there were several days in which the lower readings could not be explained away as errant readings. In particular, the month of September saw frequent situations in which the

downstream DO concentration was lower than the upstream concentration. Some readings were more than two units lower than their upstream counterpart. Having a lower DO concentration downstream of a project is unacceptable and the situation should be rectified. It is for these reasons that the WRS regards the Willow Island Project as not meeting the requirements of this criterion.

Criterion C – Upstream Fish Passage

The Willow Island facility was built in association with an existing lock and dam structure. As is such, the lock chamber is able to provide a limited source of upstream fish passage, in lieu of the impediments to upstream travel presented by the dam. This would satisfy the conditions of standard C-1 of this criterion (Not Applicable/De Minimis Effect).

Criterion D – Downstream Fish Passage and Protection

AMP has yet to fully meet the requirements of this criterion. An entrainment analysis still needs to be performed in order to properly assess the impacts of the Willow Island facility on the broader fish community. With a trash rack of 8 inches, we can only assume that larger fish, more susceptible to blade strikes and mortality, may find themselves passing through the turbines. The turbine design being utilized for this facility is expected to result in low turbine-induced mortality, but these are all expectations and assumptions. The reality may offer far different results. Without having a concrete set of data available as a result of quality studies, the WRS cannot properly make a determination on the impacts of this facility. For these reasons, the WRS regards the Willow Island Project as not meeting the requirements of this criterion.

Criterion E – Shoreline and Watershed Protection

The Ohio River in the vicinity of the Willow Island Hydropower Project is lined on both sides by large stone and rip/rap. In addition, water breaks have been installed along the left descending bank of the river, which also provide habitat for many fish species in the area. The WRS considers Willow Island to have met the requirements for standard E-1 of this criterion (Not Applicable/De Minimis Effect).

Criterion F – Threatened and Endangered Species Protection

AMP has been diligent in performing mussel surveys of the area. The latest mussel survey was completed in 2016, a short time after the Willow Island Project went completely on-line. When compared with the mussel study performed in 2012, there has been no significant change in the number of species and specimens found. Caution must be used, however, when interpreting these results. With less than one year of post-construction mussel data available, the true long-term impact the Willow Island Project will have on the mussel community cannot be determined.

Several freshwater mussel species of conservation concern have been documented within the vicinity of the Willow Island Project. These species include the federally listed fanshell species and many WV listed imperiled species: butterfly (S2), elephant-ear (S2), washboard (S2), Ohio pigtoe (S2), round pigtoe (S2), monkeyface (S2), fawnsfoot (S1), and deertoe (S2). Populations

for some of these species improved in the 2016 study (butterfly, Ohio pigtoe, fawnsfoot, and deertoe) while other species saw a decline in their population (elephant-ear, washboard, round pigtoe, and monkeyface). Inferences can thus be made one way or the other, which is why more studies on the mussel population need to be performed over a longer period of time. It is simply too soon to notice trendlines in populations. Essentially, the 2016 data that is available is only reflective of the changes to the population over the period of construction and not over the period of operation. The WVDNR has also recently re-established two federally listed mussel species (northern riffleshell and clubshell) to a portion of the Ohio River approximately seven miles downstream of the Willow Island Project which has yet to fully be studied with relation to this project.

The WRS is also concerned that the host fish species for many of the WV imperiled mussels and federally endangered mussels are not adequately protected by the Willow Island facility such as to ensure degradation in mussel populations does not occur. With an 8-inch trash rack many of the larger host species for these mussels (freshwater drum, sauger) may suffer from turbine-induced mortality, thus further threatening the mussel population. An entrainment study would be paramount in fully and completely determining the impact of the Willow Island Project on the host fish species.

Based on the lack of available long-term post-construction data on mussel population and the absence of entrainment/mortality data, the WRS cannot make a proper determination on the impacts. For this reason, the WRS regards the Willow Island Project as not meeting the requirements of this criterion.

Criterion G – Cultural and Historic Resource Protection

This particular criterion is out of the purview of the WRS. For that reason, the WRS offers no comment with regards to this criterion.

Criterion H – Recreational Resources

In 2015, AMP completed implementation and construction of conditions within a Recreation Management Plan created in consultation with WVDNR. This plan included the construction of fish attractants, a fishing pier, and a grouted angler access. The WRS considers AMP to have met the requirements of standard H-2 of this criterion (Agency Recommendations).

Considering all of the requirements for the LIHI certification, the WRS does not recommend that the Willow Island Hydroelectric Project be granted certification at this time. More studies are still needed to be performed in order to more fully assess the impacts of the facility. With only a year of operation, AMP may have prematurely submitted their application for certification and may do better after several more years of quality data on the facility's impacts have been obtained.

If you have any questions regarding this letter or wish to discuss this issue further, please contact me by telephone at (304)825-6787, or by email at Jacob.D.Harrell@wv.gov.

Sincerely Yours,

Jacob Harrell
Coordination Unit