

## LOW IMPACT HYDROPOWER INSTITUTE

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### MEMORANDUM

To: LIHI Governing Board  
From: Fred Ayer  
Date: November 20, 2006

Re: **Application for Low Impact Hydropower Certification  
Raystown Hydroelectric Project (William F. Matson Generating Station)  
Raystown Branch, Juniata River Huntingdon County, PA (FERC #2769)**

#### **Introduction**

This memo reviews the application for Low Impact Hydropower Certification by the Allegheny Electric Cooperative for the Raystown Hydroelectric Project (William F. Matson Generating Station). The FERC Project Number is 2769.

#### **Project Summary**

*Facility location:* Raystown Branch, Juniata River, Huntingdon County, PA

*Installed capacity:* 21 MW

*Average annual generation:* 87,895,876 KWh (1996 – 2005)

*FERC license:* FERC Licensed Project No. 2769. License issued on November 10, 1982. License expires October 31, 2032.

*Date application posted to website:* August 11, 2006

*Date public comment period closes:* October 11, 2006

#### **Background**

The Raystown Hydro Project is located at the Raystown Dam, managed by the U.S. Army Corps of Engineers (Corps), is located on the Raystown Branch of the Juniata River, about 5.5 miles upstream from its confluence with the Juniata River and 92 miles above the confluence of the Juniata River with the Susquehanna River. Raystown Dam and Raystown Lake are located in

south central Pennsylvania in Huntingdon County, near the borough of Huntingdon. Construction of the dam began in October 1968 and was completed in October 1973.

### **Facility Description**

The Raystown Dam is 225 feet high and consists of a rolled earth and rockfill embankment with a gated spillway in the right abutment. The top 3.5 feet of the ungated spillway is a fuse plug of erodible backfill material. The gated spillway is controlled by two 45-foot square tainter gates and is equipped with a warm water outlet system with a 4.75-foot by 6.75-foot slide gate served by inlet ports at three levels. There is a low-level outlet tunnel with two 5.5-foot by 10-foot gates.

The Allegheny Electric Cooperative (AEC) operates the 21 megawatt Raystown Hydroelectric Project (William F. Matson Generating Station) at Raystown Lake. The hydroelectric station, completed in 1988, is located at the base of Raystown Dam and is operated in close cooperation with the Corps. The Corps gives all flow and temperature regulating instructions to AEC. Constant flow discharges are adjusted on a daily basis to minimize fluctuations downstream.

The hydroelectric station control facilities are separate from those of the Corps facilities. The hydroelectric station intake tower has the capability of withdrawing water from different levels of the lake for downstream temperature control. Intake trash rack clear spacing is 3 inches. Flow velocities at the intake are maintained at less than or equal to 3 feet per second. The concrete tunnel stretching from the intake tower to the powerhouse is 12 feet in diameter, steel-lined, and 930 feet long. The steel penstock is 12 feet in diameter and 550 feet long. There are two power-generating units in the powerhouse. Unit 1 has a flow range of 200 to 600 cubic feet per second (cfs) and a rated output of 7 megawatts. Unit 2 has a flow range of 500 to 1100 cfs and a rated output of 14 megawatts. 22 adjustable wicket gates control flow through each unit. Flow is also regulated by the closure of two turbine shut-off valves located upstream of the generating units. Flow through the tunnel, penstock, and powerhouse can be regulated by the closure of a 12-foot square wheel gate located in the intake structure.

### **Public comment**

There were no public commenters on the application for the Raystown Hydroelectric Project.

### **General conclusions**

***Note:** This application for the Raystown Project was filed in August 2006, but I had the interesting opportunity to discuss and receive comments from Pennsylvania agency staff at a meeting held in June 2006 for a different project (Holtwood). The agency people who approached me during a break in the Holtwood meeting wanted me to know that they supported Low Impact status for the Raystown Project. They had attended an information meeting in May 2006 sponsored by the Applicant. The goal of this meeting was to inform attendees about the Low Impact Hydropower Institute's mission and Allegheny's desire to have the William F. Matson Generating Station (FERC Project No. 2769) certified as a "low impact" facility. The Applicant had explained that no new construction or modifications to the existing facilities were being proposed. They also explained*



*that low impact certification was separate from the hydroelectric project's FERC license, which expires in 2032.*

The project appears to be consistent with LIHI criteria. The conversations I had with State and Federal Resource agency staff only reinforced this conclusion. The agency staffers were very positive about the applicant and their operation of the Raystown Hydroelectric Project and supported its certification as Low Impact.

### **Recommendation**

Based on the positive feedback from resource agencies and confirmation that there have not been changes or problems, I believe the Raystown Hydroelectric Project meets the LIHI criteria and should be certified as Low Impact.

## **Low Impact Certification Criteria**

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### **A. Flows:**

#### **Criteria**

**Is the facility in Compliance with Resource Agency Recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement for both the reach below the tailrace and all bypassed reaches?**

**YES.**

Facility is in compliance with Resource Agency Recommendations included in the FERC operating license issued November 11, 1982, and the Operating Agreement between the U.S. Army Corps of Engineers and Allegheny Electric Cooperative: 200 cfs minimum flow May – November; 480 cfs minimum flow December – April. These minimum flows are categorized by the Montana-Tenant method as “outstanding” to “optimum” from December through March, “excellent” to “outstanding” in April, “good” to “excellent” in October and November, and “poor” to “fair” from May through September.

The Corps and the State of PA had agreed upon 200 cfs and 480 cfs minimum flow discharge requirements from Raystown Lake for summer (May 15 - November 15) and winter (November 15 - May 15) operation, respectively. The same flow requirements are included in Allegheny's 1982 FERC license and in the 1988 Operating Agreement between the Corps and Allegheny. The Corps, PA Fish & Boat Commission, and the U.S. Fish & Wildlife Service were involved in determining flow requirements related to hydroelectric project operation.

The Pennsylvania Fish & Boat Commission has stated that flows are appropriately protective of fish, wildlife, and water quality.

**PASS.**

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### **B. Water Quality:**

#### **Criteria**

**1) Is the Facility either:**

**a) In compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the facility after December 31, 1986? Or**

- b) In Compliance with the quantitative water quality standards established by the state that support designated uses pursuant to the federal Clean Water Act in the Facility area and in the downstream reach?**

**YES**

a) N/A. The Pennsylvania Department of Environmental Resources, Bureau of Water Quality Management, issued a Clean Water Act Section 401 water quality certification for the facility on June 24, 1980.

**NOTE:** *Although the §401 certificate for this project was issued in 1980, the Pennsylvania DEP in a November 6, 2006 letter said, "A review of current data concluded the design and operation of the Alleghany Electric Cooperative, Raystown Dam Hydropower Station is in compliance with the §401 certification and has maintained a minimum impact on water quality." Further in the letter, the DEP "...recommends the Low Impact Hydropower Institute grant certification as a low impact facility..."*

b) Yes. The facility is in compliance with the following Raystown Branch Juniata River protected water uses: water supply, recreation, aquatic life, trout stocking, and warm water fisheries. The facility is also in compliance with Article 34 of its FERC operating license, Water Temperature Monitoring Plan.

**If yes, go to B2.**

- 2) Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act?**

No. However, approximately 6.6 miles (river mile 38.8 to 45.4) of the Raystown Branch Juniata River (State Water Plan: 11D) at the upstream end (28 miles upstream of the facility) of Raystown Lake (Assessment ID 20020111-1234-FIT) were listed as 303(d) impaired for Human Health Uses in the 2004 Pennsylvania Integrated Water Quality Monitoring and Assessment Report. The cause of impairment is Mercury. The source of the impairment is Unknown.

**PASS.**

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### **C. Fish Passage and Protection:**

#### **Criteria**

- 1) Is the facility in compliance with Mandatory Fish Passage Prescriptions for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986?**

**NA -**

**NA = Go to C5**



**2) Are there historic records of anadromous and/or catadromous fish movement through the Facility area, but anadromous and/or catadromous fish do not presently move through the Facility area (e.g., because passage is blocked at a downstream dam or the fish run is extinct)?**

Yes. American shad and American eel were once numerous in the Juniata River.

**a) If the fish are extinct or extirpated from the Facility area or downstream reach, has the Applicant demonstrated that the extinction or extirpation was not due in whole or part to the Facility?**

Yes. In the early 1900s, four large hydroelectric dams were built on the Susquehanna River, blocking shad and eel passage. An earlier Raystown Dam, constructed about three miles upstream of the existing dam in 1904, also blocked shad and eel passage. The existing U.S. Army Corps of Engineers Raystown Dam, which inundated the earlier dam, was completed and operational in 1973. These facilities resulted in the extirpation of shad and eel from the Raystown Branch of the Juniata River long before the Raystown Hydroelectric Project (William F. Matson Generating Station), located at the base of Raystown Dam, was completed and operational in 1988.

**5) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream or downstream passage of riverine fish?**

Yes. Article 15 of the FERC operating license allows for the implementation of such measures, if ordered by FERC or upon the recommendation of resource agencies. No such order or recommendations have been made.

*If YES, go to C6.*

**6) Is the facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?**

YES - The facility is in compliance with recommendations from all resource agencies.

**PASS.**

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**D. Watershed Protection:**

**Criteria:**

**1) Is the Facility in Compliance with Resource Agency Recommendations, or, if none, with license conditions, regarding protection, mitigation or enhancement of lands inundated**

**by the Facility or otherwise occupied by the Facility, or regarding other watershed protection, mitigation and enhancement activities?**

Yes. The U.S. Army Corps of Engineers, which manages the Raystown Lake shoreline and adjacent lands, owns and has dedicated for conservation purposes all undeveloped land within 300 feet horizontal from elevation 812 ft above MSL.

**PASS.**

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**E. Threatened and Endangered Species Protection:**

**Criteria:**

- 1) Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?**

Yes. Bald eagles (state endangered, federally threatened) are known to nest in the vicinity of Raystown Dam. Virginia mallow (state endangered) is also known to occur in the vicinity of the facility.

- 2) If a recovery plan has been adopted for the threatened or endangered species pursuant to Section 4(f) of the Endangered Species Act or similar state provision, is the Facility in Compliance with all recommendations in the plan relevant to the Facility?**

Yes. A bald eagle recovery plan has been adopted. The facility is in compliance with all relevant recommendations in this plan.

**PASS.**

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**F. Cultural Resource Protection:**

**Criteria:**

- 1) If FERC-regulated, is the Facility in compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license or exemption?**

Yes. The facility is in compliance with Article 33 of the FERC license, which requires consultation with the State Historic Preservation Office prior to the commencement of any construction or alteration.

**PASS.**

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**G. Recreation:**

**Criteria:**



**1) If FERC-regulated, is the Facility in Compliance with the recreational access, accommodation (including recreational flow releases) and facilities conditions in its FERC license or exemption?**

Yes. The facility is in compliance with Article 35 of the FERC license, which required finalizing a recreation plan in consultation with the U.S. Army Corps of Engineers and filing of as-built recreation drawings. The approved recreation plan required installation of an ADA-accessible fishing pier in the facility tailrace area. Photographs of this pier are included in Attachment G.. *If yes go to G3.*

**2) Does the Facility allow access to the reservoir and downstream reaches without fees or charges?**

Yes. The facility described in response to G.1 is accessible without fees or charges. In addition, the U.S. Army Corps of Engineers provides a variety of day-use and overnight recreational facilities around the 118-mile reservoir shoreline, along with recreational facilities on the downstream reach. These facilities are accessible without fee or at a nominal fee.

**PASS.**

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**H. Facilities Recommended for Removal:**

**Criteria:**

**1) Is there a Resource Agency recommendation for removal of the dam associated with the Facility?**

NO.

There have been no recommendations for removal of the dam.

**PASS.**

**FACILITY IS LOW IMPACT**



## **RECORD OF CONTACTS**

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Date of Conversation:	November 24 , 2006 (left message)
Application Reviewer:	Fred Ayer, Executive Director
Person Contacted:	Mark A. Hartle, Chief, Aquatic Resources Section
Affiliation:	Division of Environmental Services Pennsylvania Fish & Boat Commission
Telephone/email:	814-359-5133
Areas of Expertise:	Fisheries

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Date of Conversation:	October , 2006 (Left messages)
Application Reviewer:	Fred Ayer, Executive Director
Person Contacted:	James S. Spontak, Program Manager
Affiliation:	Watershed Management Program Pennsylvania Department of Environmental Protection
Telephone/email:	717-705-4799
Areas of Expertise:	Water Quality, flows and project operation

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John called me on November 27 to let me know that he has asked William F. Botts to call me. Bill is a Water Pollution Biologist for the agency who I met when I was in Pennsylvania to meet with stakeholders on another project. He spoke highly of the Raystown Project and called me later in the summer to get some guidance on what would be helpful in a letter of support for the Raystown certification. Apparently Bill drafted the letter for his supervisor to sign, but it never went out. The applicant contacted Bill, who said that the letter would be sent. LIHI received the letter (electronically) on November 9, and a hard copy several days later.

I spoke with Bill on December 4, 2006, and was able to confirm that what was said in the letter is quite clear about the Pennsylvania DEP's belief that after looking at current data, that the Raystown Project had minimum impact on water quality and that the agency supports Low Impact certification of the Raystown Project.

Date of Conversation: September 12, 2006 (Left messages)  
Application Reviewer: Fred Ayer, Executive Director  
Person Contacted: David Densmore, Field Supervisor  
Affiliation: U.S. Fish & Wildlife Service, Pennsylvania Field Office  
  
Telephone/email: 814-234-4090

After some time, I received a call (November 28<sup>th</sup>) from Cindy Tibbets from the USFWS, who had been directed by Densmore to call and talk with me. She wasn't real familiar with the project, but had attended a meeting that the applicant held to discuss the LIHI process which she was familiar with. She knew of no problems with the project and had positive things to say about the applicant. Although not specific, Cindy agreed with my understanding that if fish passage is required it will not be in the foreseeable future. Cindy said that the agency was understaffed and overworked and generally spread thin, so it was not possible for the USFWS to have a day-to-day knowledge on whether the applicant had a good compliance record, but she had not heard of any problems.

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