



**DIVISION OF NATURAL RESOURCES**

**Wildlife Resources Section**

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**Joe Manchin III**  
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December 12, 2008

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

**RE: Winfield Hydropower Project P-1290, Study Requests**

Dear Secretary Bose:

Thank you for the opportunity to provide comments on the proposed studies related to the licensing process for the Winfield Hydroelectric Project (P-1290). The West Virginia Division of Natural Resources (WVDNR) concurs with all five of the study requests listed in the Pre-Application Document (PAD). WVDNR, Wildlife Resources Section Biologists from Game, Fish, and Wildlife Diversity Units have been consulted regarding the proposed re-licensing. We are providing comments on four of the study requests for your consideration. The Cultural Resources study that is listed in the PAD and Scoping Document is outside the purview of the WVDNR. The WVDNR has attempted to follow the format as described in 18 CFR 5.9(b) for each of the study requests.

**Proposed Studies**

**1. Study Request: Impact of peaking on shoreline and aquatic habitat, aquatic resources, and recreational facilities at the Winfield tailwaters and pool.**

**Goals and Objectives:**

The goal of this study is to determine the impact of implementing a three-foot peaking provision at the London Dam on the flow, habitat, aquatic species, and associated recreation at the Winfield Dam.

**Resource Management Goals:**

The WVDNR is charged with the protection and management of all wildlife species within West

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Virginia. The tailwaters below the Winfield project is a popular fishing location. The WVDNR manages the fishery for public recreation in both the tailwaters and pools created by the dams. Freshwater mussels are protected species that may be impacted by the proposed peaking. Recreational use facilities such as boat ramps, docks, and fishing piers may be adversely affected by the proposed peaking operation. Erosion of stream banks and fluctuating water levels around islands and in embayments may occur with the result of adverse effects on habitat.

**Existing Information:**

The WVDNR is unaware of any studies or information that would address this concern for this area.

**Nexus Between Project Operation:**

Aquatic species and their related habitats and associated recreation can be affected by the modification of pool levels and fluctuating flows in the tailwaters from a hydropower facility. The PAD reports that peaking operations at London would have to be mimicked at the Winfield Dam starting approximately one hour after the peaking operation was initiated at London Dam. A continuous pattern of increasing and decreasing the pool level could result in adverse impacts on the aquatic environment, aquatic life, and recreation.

**Study Methodology:**

Instream flow methods are commonly utilized in planning for major water development projects. The Instream Flow Incremental Methodology, developed by the U.S. Fish and Wildlife Service, is a one-dimensional model that could be used for assessing the hydrological impacts of peaking; and coupled with a physical habitat simulation model (e.g. PHABSIM) the effect on habitat at various stages and flows could be evaluated. Evaluations of erosion generally include, at a minimum, literature review, field reconnaissance, surveys, and modeling.

**Level of Effort and Cost:**

Consulting firms, universities, and, some state agencies can perform instream flow and erosion potential studies. The methods for these types of studies are well established. The WVDNR recognizes that certain training, expertise, and equipment is necessary to conduct these studies. However, numerous studies of a similar nature have been conducted on waters throughout the United States. The WVDNR is unable to determine the cost of the proposed study.

**2. Study Request: Recreational Use.**

**Goals and Objectives:**

The goal of the proposed study is to assess recreational use in the tailwaters and pools associated with the Winfield Project.

**Resource Management Goals:**

A statutorily mandated policy of the State of West Virginia is that wildlife resources of the State shall be protected for the use and enjoyment of all of its citizens; and that the benefits derived from its wildlife shall include hunting, fishing, and other diversified recreational uses. The WVDNR is responsible for managing West Virginia wildlife and fishery resources and providing sufficient populations of these species for the benefit of its citizens and opportunities to enjoy terrestrial and aquatic wildlife resources, boating, and related outdoor recreation.

In the tailwaters and Winfield pool, the study should include, at a minimum, information about estimated angler effort (hours), catch, harvest, and release rates; differentiate pier anglers from shore, and boat anglers, determine any angler species preference, include size of fish caught, released, and harvested, describe angler demographics, and general comments related to the past and current operation of the Winfield Project. Protocol for sampling and reporting should be extensive enough to provide statistically valid estimates for the parameters listed above for all seasons of the year.

**Existing Information:**

The WVDNR is unaware of any studies or information that would address this issue at these particular locations.

**Nexus Between Project Operation:**

Hydropower operational flows can have an effect on angling success in the vicinity of the proposed projects. In addition, Appalachian Power Company (APC) is proposing a three-foot peaking operation for the London Development that would be mimicked at the Winfield project and if approved, could have an impact on recreational use in the Project pool and tailwaters.

**Study Methodology:**

The WVDNR recommends that APC utilize the protocol currently being employed by the Ohio River Fish Management Team at locks and dams throughout the Ohio River in consultation with the WVDNR. The WVDNR recommends that both the development tailwaters and the pools should be included in the study. Creel census information should be described separately for boat, bank, and pier anglers, for seasonal and monthly estimates. Initially we are proposing the study be repeated every five years throughout the duration of the license.

**Level of Effort and Cost:**

The level of effort would require survey crew(s) to conduct interviews and perform roving counting protocols. The WVDNR cannot predict the cost of the proposed project.

**3. Study Request: Dissolved Oxygen.**

**Goals and Objectives:**

The goal of this study is to determine the impact of continuing operation of the developments on dissolved oxygen concentrations in the Kanawha River.

**Resource Management Goals:**

Dissolved oxygen is a critical component of water quality that can have an effect on aquatic life. The WVDNR is charged with the protection of aquatic life within the State. The WVDNR is concerned about the maintenance of dissolved oxygen during periods of low flow and elevated temperatures.

**Existing Information:**

While the WVDNR does not have information regarding dissolved oxygen, the West Virginia Department of Environmental Protection, and the U.S. Army Corps of Engineers monitors dissolved oxygen.

**Nexus Between Project Operation:**

Hydropower operation can reduce the amount of dissolved oxygen being replenished at dams. Especially during low flows when most or the entire stream flow is passing through the turbines and not going through the gates in the dam. Hydropower intake structures near the bottom of the river can draw water with lower dissolved oxygen due to partial or complete stratification.

**Study Methodology:**

The WVDNR recommends that continuous monitors be established in the pool above and below the project. The locations and number of the monitors should be decided after consultation with the resource agencies. Additionally, the WVDNR recommends that transect surveys be conducted in the Winfield pool and downstream to determine the effect of the project on dissolved oxygen. The transects should be located near as practical to the mid-point between the dams for the upstream pool, and between the Winfield Project and the mouth of the Kanawha River for the downstream transect. At each transect, vertical temperature and dissolved oxygen readings should be taken. A minimum of three verticals should be evaluated with one in the

center of the channel. The number of readings taken at each vertical should be based on 2 meter spacing from the stream bottom to the surface. The transect survey should be performed during low flow periods which are traditionally in August and September.

**Level of Effort and Cost:**

Placing the monitors could be done in a day. Periodic servicing would require someone proficient in providing the manufacture's maintenance guidelines. The WVDNR cannot determine the cost of this study due to the variables associated with monitoring equipment and decisions about how the equipment would be serviced.

**4. Study Request: Fish entrainment and impingement study.**

**Goals and Objectives:**

The goal of this study is to determine the entrainment and mortality rate of fish that pass through the development turbines and/or that are injured or killed by impingement on the intake or trash screens.

**Resource Management Goals:**

The WVDNR is charged with the protection and management of all wildlife species within West Virginia. The tailwaters below the Winfield Project is a popular fishing location. The WVDNR manages the fishery for public recreation in the tailwaters.

**Existing Information:**

No known entrainment or impingement studies have been conducted at the Winfield Project.

**Nexus Between Project Operation:**

Fish entrainment studies within West Virginia have revealed that significant numbers of fish are entrained through hydropower facilities. Mortality rates vary with turbine type and speed, hydraulic head, runner design, species of fish, their size and shape, and age of the entrained fish, and other factors.

**Study Methodology:**

It is reported in the scoping document and PAD that methods will be discussed prior to preparing the study plan. APC is proposing a desktop study to determine fish entrainment and mortality. Various factors can be considered in a desktop study. At a minimum, Kanawha River fish species likely to be encountered in the vicinity of the hydropower facility would need to be

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determined. Those species would then be evaluated by literature reviews for swim and burst speeds; and other factors that might make them susceptible to be entrained. The hydropower facility and the associated equipment related to power production would be evaluated. Based on traditional netting studies to evaluate fish entrainment/impingement, where similar equipment, conditions, and species occur, would then be considered to draw conclusions about the risk of entrainment and impingement at the two developments included in the subject project.

**Level of Effort and Cost:**

The WVDNR is unable to determine the level of effort and cost for this type of study.

The WVDNR appreciates the opportunity to comment on these study requests. We look forward to working with personnel from APC and the Federal Energy Regulatory Commission throughout the licensing process. If you have any questions regarding this request feel free to contact me.

Sincerely,



Kerry Bledsoe, Hydropower Coordinator  
Wildlife Resources Section  
kerrybledsoe@wvdnr.gov

cc: Teresa Rogers, APC  
Lyle Bennett DEP  
Tom Chapman FWS