UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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P.O. Box 1070
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SUBJECT: Draft Environmental Impact Statement for Wolf Creek Dam/Lake Cumberland Project, Emergency Measures in Response to Seepage in Jamestown, Kentucky; CEQ Number 20070425

Dear Mr. Hall:

The U.S. Environmental Protection Agency (EPA) has reviewed the referenced Draft Environmental Impact Statement (EIS) in accordance with its responsibilities under Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act (NEPA). The Wolf Creek Project, owned and operated by the U.S. Army Corps of Engineers (USACE), is located on the Cumberland River near Jamestown, Kentucky. The Wolf Creek Dam is a combination earthen fill and concrete structure approximately 5,736 feet long and 258 feet high. Lake Cumberland, created by the dam, has a drainage area of 5,789 square miles and a surface area of 63,530 acres.

Since the 1960s, seepage through the dam's foundation has been a concern. Repairs have been implemented at various times including grout injection into the foundation and the installation of a diaphragm wall through about two-thirds of the earthen embankment. These repairs are credited with saving the dam; however, some seepage problems remained. In recent years, the problems have increased and the dam is now classed as being in an active failure mode. To address these problems, the USACE developed specific dam repair and remediation projects in 2006 and 2007. At the time, no significant changes to the normal pool elevations were considered necessary. However, the repairs identified will take a number of years to complete and the risk of potential dam failure will increase during this time. Therefore as a proactive measure, the USACE proposes to evaluate different interim lake elevations to reduce the hydrostatic pressure and potential risk of dam failure. When repairs are complete, the Wolf Creek Project would return to normal operations.

Lake levels at Lake Cumberland have historically been managed in accordance with the Wolf Creek Project Guide Curve. This operations guidance divides the lake into distinct pools (layers) based on three elevations (EL 760, 723, and 673) which form boundaries for project operations throughout the year. The bottom layer of Lake Cumberland is the inactive storage pool (from the bottom of the reservoir up to EL 673). The next zone is the power pool, which is a 50-foot "normal operating zone" between EL 673 and 723. This is the zone in which water is

stored for hydropower and other project purposes. The flood control pool extends from EL 723 to EL 760. The normal condition is for this pool to remain empty so that space is available for flood water storage. Overall normal project operations have historically followed a guide curve within a "Power Marketing Band" (PMB), which falls within the power pool and represents the optimal range for power generation. The normal summer pool elevation is EL 723, and the normal winter pool elevation is EL 683. For the purposes of the Draft EIS, this is considered the no action alternative. However in January 2007, due to the risk associated with the dam's instability, the USACE deemed it necessary to take emergency action and lower the target pool elevation at Lake Cumberland to EL 680 to ease the stress on the dam's foundation until repairs can be made. A total of five interim pool elevation alternatives (e.g., temporary operating bands or guide curves) were evaluated in the Draft EIS, ranging from maintaining Lake Cumberland at normal levels to a drawdown to EL 650. No overall preferred alternative was identified.

In general, EPA supports the purpose and need for the action proposed in the Draft EIS. EPA understands that lake levels must be managed as part of dam remediation activities to first and foremost maintain public safety and minimize the risk of dam failure. However, EPA has environmental concerns with some of the alternatives related primarily to water quantity and water quality in the reservoir and project dam releases. EPA offers the following specific comments for your consideration in development of the Final EIS for this project:

Alternatives

EPA understands the dynamic nature of operations at the Wolf Creek Project during this time of dam repairs; however, EPA is unclear of the status of the alternatives described in the Draft EIS, particularly selection of a preferred alternative, based on a recent press release from the USACE. The USACE announced in a press release (October 2007) that a decision-making process has been developed to consider higher future lake levels at Lake Cumberland. The release suggested that the process would be used in early 2008 when the upstream grout curtain is anticipated to be complete. The process would allow for incremental changes in lake elevations depending on the continued satisfactory results of performance indicators and structural improvements to the dam's foundation. The incremental raise being considered would be in the range of five to ten feet. How is this process related to what is described in the Draft EIS? It does not appear that the Draft EIS includes this process, as described in the press release, as an alternative. Alternative 4 appears to be the only alternative that involves the ability to adjust lake levels depending on certain situations.

In the absence of anything specific in the Draft EIS, EPA recommends that the USACE consider an aggressive adaptive management alternative in the Final EIS for managing lake levels during dam repairs, similar to what is described in the USACE press release. Based on information in the Draft EIS and press release, it would appear that conditions at the project are improving and the dam is becoming safer as repairs are completed. A preferred alternative should be selected that includes thorough project monitoring with the ability to allow for higher lake levels (above EL 680) based on certain performance indicators at the project, such as piezometers, wet spots, and settlement on top of the dam.

In addition, there does not appear to be any information in the Draft EIS about the anticipated timeframe for the duration of interim lake levels during dam repair activities associated with the alternatives. EPA recommends that the Final EIS include a discussion of the anticipated length of time that the lake levels would be lowered below normal until repairs are complete.

Water Quality/Water Quantity

It appears that water quality and aquatic resources would sustain moderate to severe adverse impacts under any of the action alternatives. At the lower operating bands, virtually all project purposes except for flood control would be moderately to severely impacted. Water quality, particularly dissolved oxygen (DO) and temperature, would become major concerns, especially in the project tailwaters and downstream. The fisheries both in the lake and in the tailwater would be stressed. Poor water quality together with algal and bacterial blooms would require additional processing by municipal water suppliers. If the USACE selects any of these alternatives, it appears that discharges from Lake Cumberland, downstream of the dam, will not likely meet state water quality standards for DO during mid to late summer. Therefore, EPA recommends immediate implementation of the mitigation measures described in Section 2.5 to ensure that discharges from the project meet state water quality standards. See additional comments on mitigation and monitoring below.

Water quantity is an important consideration for water supply and water quality. It is understood that lowering pool elevations would increasingly benefit flood storage; however, the availability of water quantity downstream of the Wolf Creek Project could be greatly reduced. Wolf Creek normally contributes up to 69% of the Cumberland River flow. From a cumulative impacts standpoint, since similar restrictions are being considered for the Center Hill Project, EPA strongly recommends that the USACE develop interim changes to the operating protocols at other lakes in the Cumberland watershed to provide supplemental flows, as necessary, as described in Section 2.5.3. Perhaps this is also what is proposed as part of Alternative 5. This should be explained in the Final EIS.

Mitigation and Monitoring Measures

A number of potential mitigation measures are described in Section 2.5 for the Wolf Creek Project. For example, Section 2.5.1 references an operating protocol that involves blending turbine and sluice gate discharges to provide continuous minimum flows with high levels of DO. Section 4.3 describes this as an important water management option to provide cold, oxygenated water for the tailwater and to conserve the zone of cold water in the lake used by important fish species. This appears to be an important measure to minimize impacts of the proposed drawdown on downstream water quality. However, it is unclear if this measure (or others listed in Section 2.5) is being proposed as part of this action.

EPA recommends that the Final EIS clearly identify the specific mitigation measures and any monitoring efforts that will be implemented at the Wolf Creek Project associated with the changes in lake elevations from dam remediation efforts. From a water quality standpoint, there is little information in the Draft EIS that describes current water quality monitoring associated

with the project. EPA supports an overall monitoring approach following completion of the EIS process that includes rigorous DO and temperature monitoring and a commitment to pursue additional DO enhancement measures based on the results of this monitoring. EPA is interested in water quality monitoring in the project area to determine compliance with state water quality standards, especially during this time of changing project conditions. Monitoring should be utilized to determine the impacts of the changes in lake elevations, associated flow releases, and other project changes on water quality. EPA recommends that the Final EIS include a project operations and flow monitoring plan that identifies water quality monitoring to support such an objective, if this is not already in place.

EPA also recommends that the USACE consider including a "mitigation" measure related to public outreach during this time of interim operations. This commitment could include more detailed, up-to-date monitoring information (reservoir levels, downstream flows, etc.) on a publicly available website to inform the public of current operations, the status of repairs, and any proposed changes to lake levels (immediate or longer-term) that are necessary as a result of dam distress monitoring. This would be a part of the adaptive management approach described above. These measures and a proposed implementation schedule should be included in the Final EIS.

We rate this document EC-1 (Environmental Concerns). Enclosed is a summary of definitions for EPA ratings. We have concerns that the proposed action identifies the potential for impacts to the environment that should be avoided/minimized. We appreciate the opportunity to review the proposed action. Please contact Ben West of my staff at (404) 562-9643 if you have any questions or want to discuss our comments further.

Sincerely,

Heinz J. Mueller, Chief
NEPA Program Office
Office of Policy and Management

Enclosure

cc: Tennessee Department of Environment and Conservation

U.S. ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL IMPACT STATEMENT (EIS) RATING SYSTEM CRITERIA

EPA has developed a set of criteria for rating Draft EISs. The rating system provides a basis upon which EPA makes recommendations to the lead agency for improving the draft.

RATING THE ENVIRONMENTAL IMPACT OF THE ACTION

- LO (Lack of Objections): The review has not identified any potential environmental impacts requiring substantive changes to the preferred alternative. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposed action.

- EC (Environmental Concerns): The review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact.

- EO (Environmental Objections): The review has identified significant environmental impacts that should be avoided in order to adequately protect the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). The basis for environmental objections can include situations:

  1. Where an action might violate or be inconsistent with achievement or maintenance of a national environmental standard;
  2. Where the Federal agency violates its own substantive environmental requirements that relate to EPA's areas of jurisdiction or expertise;
  3. Where there is a violation of an EPA policy declaration;
  4. Where there are no applicable standards or where applicable standards will not be violated but there is potential for significant environmental degradation that could be corrected by project modification or other feasible alternatives; or
  5. Where proceeding with the proposed action would set a precedent for future actions that collectively could result in significant environmental impacts.

- EU (Environmentally Unsatisfactory): The review has identified adverse environmental impacts that are of sufficient magnitude that EPA believes the proposed action must not proceed as proposed. The basis for an environmentally unsatisfactory determination consists of identification of environmentally objectionable impacts as defined above and one or more of the following conditions:

  1. The potential violation of or inconsistency with a national environmental standard is substantive and/or will occur on a long-term basis;
  2. There are no applicable standards but the severity, duration, or geographical scope of the impacts associated with the proposed action warrant special attention; or
  3. The potential environmental impacts resulting from the proposed action are of national importance because of the threat to national environmental resources or to environmental policies.

RATING THE ADEQUACY OF THE ENVIRONMENTAL IMPACT STATEMENT (EIS)

- 1 (Adequate): The Draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

- 2 (Insufficient Information): The Draft EIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the Draft EIS, which could reduce the environmental impacts of the proposal. The identified additional information, data, analyses, or discussion should be included in the Final EIS.

- 3 (Inadequate): The Draft EIS does not adequately assess the potentially significant environmental impacts of the proposal, or the reviewer has identified new, reasonably available, alternatives, that are outside of the spectrum of alternatives analyzed in the Draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. The identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. This rating indicates EPA's belief that the Draft EIS does not meet the purposes of NEPA and/or the Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised Draft EIS.