

5.0 MITIGATION SUMMARY

During construction of all facilities associated with the dam, reservoir, and raw water transmission main, best management practices (BMPs) would be implemented, as specified in *Kentucky Best Management Practices for Construction Activities* (KNREPC, 1994). Implementation of these BMPs would control or reduce adverse impacts from soil erosion, surface water runoff, and sedimentation, as well as reduce the risk for an accidental chemical or POL (petroleum, oil, and lubricant) spill during construction activities. In addition to these measures, other measures, if taken, could minimize or avoid adverse impacts to environmental resources and human health and safety during site preparation, construction, operation, and connected actions associated with the proposed action. **Table 5-1** on the following pages lists these other measures, along with the associated resource area and potential impact to be minimized by these measures.

Since no significantly adverse direct, indirect, or cumulative impacts on air quality, noise, or environmental justice are expected from the proposed action, no mitigation measures for these environmental components would be proposed.

Table 5-1. Recommended Mitigation Measures By Resource Area and Potential Environmental Impact

Resource Area	Impact	Mitigation Measure
<p>Geology/Soils (Section 3.2.1)</p>	<ul style="list-style-type: none"> • Increased soil erosion during construction activities • Increased soil compaction and surface water runoff due to heavy construction equipment • Increased surface water runoff due to construction activities • Potential to fracture bedrock during potential blasting activities or due to the weight of the dam 	<ul style="list-style-type: none"> • Limit amount of time soil is exposed without revegetation; minimize the size of the disturbed area; Revegetate exposed areas as soon as possible following construction activities • Conduct as many construction activities as possible within the proposed impoundment area, which would not need to be revegetated • Revegetate exposed areas as soon as possible following construction activities; Use gravel parking lots during construction and operation • Ensure that proper geotechnical investigations are conducted at the site chosen as the final project location; Application of any foundation treatments determined necessary
<p>Surface and Groundwater Resources (Section 3.2.2)</p>	<ul style="list-style-type: none"> • Changes in the water quality of the reservoir during its lifetime • Changes in downstream flows and water quality due to the dam and reservoir (especially an issue at the War Fork and Steer Fork site) • Degrade the water quality of the reservoir from eutrophication due to upstream land uses 	<ul style="list-style-type: none"> • Regular monitoring of reservoir water quality for drinking and public health purposes • Installation of a multi-level intake structure to allow mixing of released water from different depths of the reservoir; Allow outflow from the dam to exceed the 7Q10* and pass-through rates during low-flow months, as long as excessive drawdown in the reservoir does not occur • Preparation and implementation of a non-point source pollutant control plan for the upstream watershed of the final reservoir site <p>* 7Q10 is the minimum average flow of water over a seven-day period, with a recurrence interval of ten years. 401 KAR 4:200 specifies the 7Q10 as the minimum flow needed to maintain water quality and aquatic life.</p>

<p>Biological Resources (Section 3.2.4)</p>	<ul style="list-style-type: none"> • Harm downstream aquatic biota due to changes in downstream flows and water quality due to the dam and reservoir • Degrade the water quality and harm aquatic biota of the reservoir from eutrophication due to upstream land uses • Potential harm to Threatened and Endangered species due to the proposed action 	<ul style="list-style-type: none"> • Installation of a multi-level intake structure to allow mixing of released water from different depths of the reservoir; Allow outflow from dam to exceed the 7Q10 and pass-through rates during low-flow months, as long as excessive drawdown in the reservoir does not occur • Preparation and implementation of a non-point source pollutant control plan for the upstream watershed of the final reservoir site • Complete surveys for the Virginia big-eared bat and the Indiana bat and, depending on the results of the surveys, continue informal consultation, or undertake formal consultation, with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act; Restrict clearing of the project area to winter months, when bats are hibernating in caves and not using tree trunks; Conduct surveys to determine the presence of the running buffalo clover at each of the proposed project sites
<p>Recreation (Section 3.2.6)</p>	<ul style="list-style-type: none"> • Affect downstream recreation during construction activities (especially an issue at the War Fork and Steer Fork site) • Affect downstream recreation due to the appearance of construction zones • Affect downstream recreation due to changes in dissolved oxygen (DO) content and temperature of the dam outflow 	<ul style="list-style-type: none"> • Minimize or eliminate construction on days in which downstream recreation is heavily-used (i.e., weekends and holidays) • Retain a buffer strip of trees of maximum width possible between construction zones and adjacent recreational uses during construction • Outflow from the dam could be taken from multiple depths within the reservoir and be aerated to increase DO content
<p>Cultural Resources (Section 3.2.7)</p>	<ul style="list-style-type: none"> • Affect a potentially-significant archaeological site discovered on both Sturgeon Creek project areas 	<ul style="list-style-type: none"> • Complete Phase II testing at this site, consisting of excavation of one-meter-square units, prior to the onset of construction to determine the presence of intact, subsurface deposits and/or features; If necessary, perform additional work, consisting of hand excavation of one-meter-square units and/or excavation of features to retrieve the artifacts

	<ul style="list-style-type: none"> • Potentially affect buried deposits in both of the Sturgeon Creek project areas • Potential for cultural resources to exist along the chosen route of the raw water transmission main and to be affected by construction along that route 	<ul style="list-style-type: none"> • Conduct sub-surface reconnaissance surveys to identify such deposits prior to the onset of construction • Survey the chosen route for cultural resources and avoid construction through any located sites
<p>Land Use (Section 3.2.8)</p>	<ul style="list-style-type: none"> • Affect the water quality of the proposed reservoir from current land uses in the project area • Affect the water quality of the proposed reservoir from existing residential septic systems in the project area 	<ul style="list-style-type: none"> • Allow any agricultural land in the project area to lie fallow for one to two years prior to impoundment of the reservoir • Ensure proper closure and/or removal of existing residential septic systems
<p>Transportation (Section 3.2.9)</p>	<ul style="list-style-type: none"> • Decrease the level of service (LOS) ratings on roads affected during construction • Create traffic congestion due to construction activities and vehicles • Affect transportation due to road relocations • Risk to public safety due to increased traffic and construction activities 	<ul style="list-style-type: none"> • Improve the standard of local roads to act as alternate routes for increased volumes of traffic during construction • Detour traffic onto local roads around the construction zones; Suspend construction during peak traffic hours on selected roads; Publicize alternate transportation routes in tourism literature and public outreach in Jackson County and the surrounding region • Construct replacement roads or road segments prior to the completion of reservoir impoundment • Increase signage along roadways to alert drivers of difficult driving conditions or inadequate infrastructure for loads
<p>Waste Management (Section 3.2.10)</p>	<ul style="list-style-type: none"> • Risk of an accidental chemical or POL (petroleum, oil, and/or lubricant) spill during construction • Risk of an accidental release and environmental contamination during removal of unregulated petroleum storage tanks in the project area 	<ul style="list-style-type: none"> • Develop Spill Prevention, Control, and Countermeasure (SPCC) plans for those areas in which chemicals or POL products would be stored or handled • Close all unregulated storage tanks according to the instructions outlined in the Closure Application for Petroleum Releases and Exempt Petroleum Tank Systems (Form 7097C) set forth by the Kentucky Division of Waste Management

<p>Human Health and Safety (Section 3.2.11)</p>	<ul style="list-style-type: none"> • Harm to human health and safety due to chemical or POL spills during construction • Degrade human health and safety from the risk of dam failure • Risk to public safety due to retained vegetation in the reservoir • Harm human health and safety from oil or fuel spills in the reservoir 	<ul style="list-style-type: none"> • Develop SPCC plans for those areas in which chemicals or POL products would be stored or handled • Use of nuclear density testing equipment during dam construction to ensure proper compaction in the structure; Use of electrical detectors to ensure absence of holes in the PVC membrane of the dam • Locate retained vegetation as to maximize the safety of recreational users (e.g., by retaining vegetation at a depth of water that would not impact boating or swimming, by placing buoys in the reservoir around the vegetation, or by retaining vegetation in areas of low water level to allow for clear visual detection of the vegetation) • Use of a multi-level water intake structure to allow for water to be withdrawn from deeper in the reservoir; Position boat ramps and/or docks far away from the intake structure
<p>Socioeconomics (Section 3.2.12)</p>	<ul style="list-style-type: none"> • Potential for community conflict and disruption of community structure due to the consequences of the project, including development pressure around the project sites • Disruption of community structure and social relations associated with the relocation of residents from the project area 	<ul style="list-style-type: none"> • Include local resident in an extensive public information program about the proposed project; Allow local residents to participate in the decision-making process associated with the project; Introduction of an extensive planning and zoning process for land in Jackson County and allow public participation in this process • Provide extensive assistance programs for these residents, both financial and socially-supportive; Relocate residents and structures to nearby land outside the project areas
<p>Aesthetics (Section 3.2.14)</p>	<ul style="list-style-type: none"> • Degrade visual quality of the area during construction 	<ul style="list-style-type: none"> • Retain a buffer strip of trees of maximum width possible between construction zones and adjacent land uses

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