

# **Final Environmental Impact Statement**

## **Jackson County Lake Project**

**Jackson County, Kentucky**

**May 2001**



**United States Department of Agriculture  
Lead Agency: Rural Utilities Service  
Cooperating Agency: United States Forest Service**

## EXECUTIVE SUMMARY

### PROPOSED ACTION

Comments received from agencies and the public on the DEIS and revision of the water needs analysis led to the reassessment of various reservoir and non-reservoir alternatives for meeting Jackson County's projected water needs. As a result of this reassessment, two types of alternatives are now considered to be reasonable for meeting those needs. The action proposed by the Jackson County Empowerment Zone Community, Incorporated (EZ), Jackson County Fiscal Court, and the Jackson County Water Association (JCWA) consists of either the construction of a roller-compacted concrete (RCC) dam to create a reservoir within Jackson County, Kentucky, and the construction of a raw water transmission main from the proposed reservoir to the existing JCWA Treatment Plant, or the construction of a water transmission pipeline from an existing surface water resource in a neighboring county to Jackson County for the purposes of importing additional water. For the dam and reservoir alternatives, a 300-foot buffer zone surrounding the reservoir horizontally from the normal pool level has been proposed to protect the water quality of the reservoir by restricting development and certain land uses in this area. Along with the dam, a water intake structure and a pump house would be constructed to pump water out of the reservoir. Proposed recreational development around the reservoir may include a boat ramp, boat dock, public beach, hiking trails, picnic areas, and a primitive campground.

The EZ has applied for Federal funds from the U.S. Department of Agriculture (USDA), Rural Utilities Service (RUS) and from the Department of Housing and Urban Development (HUD) to fund the Jackson County Lake Project. Other potential funding sources for this project include: Appalachian Regional Commission; U.S. Department of Commerce, Economic Development Administration; Kentucky State tobacco settlement money; and EZ funding.

This EIS is developed and written in accordance with the National Environmental Policy Act (NEPA) (42 United States Code (USC) 4321-4346), Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) 1500-1508), and RUS NEPA policies and procedures (7 CFR part 1794). The Jackson County Lake Project Final EIS (FEIS) incorporates the DEIS by reference, and contains only new information obtained and additional analyses conducted since the publication of the DEIS.

### PURPOSE AND NEED

Based on agency and public comments on the DEIS, and on revised Jackson County population projections from the University of Louisville, Kentucky Population Research (KPR) program, the projected water needs for Jackson County and the region were revised for the FEIS. A most probable growth and future water needs scenario was developed for Jackson County based on the average population growth rate evident from 1990 to 1999 U.S. Census Bureau population estimates for the County. Estimates of future residential, commercial, and industrial water use levels within Jackson County were also developed, and a water savings factor of 10 percent was used to account for reasonable water conservation measures within the County. For the revised

water needs analysis, regional demand was reduced from 60 percent to 42 percent of Jackson County’s projected water needs, based on the elimination of the water demand from one water supplier in a neighboring county.

Water supplied from existing sources in Jackson County, which would be in service over the 50-year design life of the proposed action, were factored in to the revised water needs projections. Due to the uncertainty of usable water supplies from two of the three existing water supply sources in the County, two types of water needs projections were calculated. One water needs projection assumes the availability of water from only one of the three existing water supply sources within Jackson County; the other assumes the availability of water from all three sources. These revised water needs projections are shown in the table below.

<b>Projected Jackson County and Regional Water Needs Based on Existing Water Supply</b>		
	<b>2050 Water Needs Less Existing Water Supply</b>	
	<b>Tyner Lake Only (0.700 mgd)</b>	<b>Tyner Lake, McKee Reservoir, and MPS # 1 (0.971 mgd)</b>
<b>Jackson County Only</b>	1,331,901 gpd (1.3 mgd)	1,060,901 gpd (1.1 mgd)
<b>Jackson County and the Region</b>	2,185,299 gpd (2.2 mgd)	1,914,299 gpd (1.9 mgd)

The higher value in the ranges of water needs presented in this table was used in determining which alternatives to investigate fully in the EIS; the lower value in the ranges was not used for the analysis. This is because the McKee water treatment plant, which treats water from both McKee Reservoir and MPS #1, is in need of upgrading in order to maintain compliance with the requirements established in the U.S. Environmental Protection Agency’s national drinking water standards. However, such upgrading is not likely to occur, as it would not be cost feasible. Therefore, for the purposes of this analysis, it was assumed that water from these two sources would not be available over the 50-year design life of the proposed action.

As shown by the above table, Jackson County has a need to obtain additional water supplies for its continued population growth, as well as for its commercial and industrial economic development. Jackson County also has a documented recreational need. According to the *Recreational Needs Analysis for the Proposed Jackson County Lake Project*, prepared by The Mangi Environmental Group, Incorporated, Jackson County has a need for additional camping, picnicking, hiking, and swimming facilities, and this need is projected to increase in the future.

The dual purpose of the proposed Jackson County Lake Project is to provide adequate water supplies for the projected residential, commercial, and industrial needs of Jackson County, and parts of some neighboring counties, over the next 50 years, and to provide recreational opportunities to meet the present and future needs of Jackson County and the surrounding region.

**ALTERNATIVES**

In preparing this EIS, the study team considered several alternative ways to meet the purpose and need of the proposed action. However, many of these alternatives were considered unreasonable,

insufficient, or impracticable. Comments received from agencies and the public on the DEIS and revision of the water needs analysis led to the reassessment of various reservoir and non-reservoir alternatives for meeting the projected water needs of Jackson County and the region. The following table lists the alternatives evaluated and eliminated from further study, and the rationale for their elimination, as a result of this reassessment.

<b>Alternatives Eliminated from Further Study</b>	
<b>Alternative</b>	<b>Rationale for Elimination</b>
<b>Non-Reservoir Alternatives</b>	
Groundwater Development	<ul style="list-style-type: none"> <li>• Insufficient yield to meet the projected needs of Jackson County due to the geology of the County</li> <li>• Potential for groundwater contamination</li> </ul>
Expansion of Tyner Lake and/or McKee Reservoir	<ul style="list-style-type: none"> <li>• Insufficient yields to meet the projected needs of Jackson County due to the sizes of the watersheds</li> </ul>
Importing Water From Surrounding Counties: Buckhorn Lake (Perry and Leslie Counties) and Laurel Lake (Laurel County)	<ul style="list-style-type: none"> <li>• Not cost-effective*</li> <li>• Administrative, legal, and temporal hurdles (for the Buckhorn Lake alternative only)</li> </ul>
Water Conservation**	<ul style="list-style-type: none"> <li>• Insufficient quantity of water able to be conserved to meet the projected needs of Jackson County</li> </ul>
Pumped Storage From Existing Sources in Jackson County: <ul style="list-style-type: none"> <li>• Laurel Fork and the Middle Fork of the Rockcastle River</li> <li>• Indian Creek Rock Quarry</li> </ul>	<ul style="list-style-type: none"> <li>• Laurel Fork and the Middle Fork of the Rockcastle River:               <ul style="list-style-type: none"> <li>○ Presence of Federally-listed Threatened or Endangered species (Cumberland Bean Pearly Mussel) in tributaries of the Cumberland River</li> <li>○ No improvement in Jackson County’s ability to withstand multi-year droughts (no additional water storage)</li> </ul> </li> <li>• Indian Creek Rock Quarry:               <ul style="list-style-type: none"> <li>○ Presence of Federally-listed Threatened or Endangered species (Cumberland Bean Pearly Mussel) downstream of Indian Creek</li> <li>○ No improvement in Jackson County’s ability to withstand multi-year droughts (no additional water storage)</li> <li>○ Concerns over water quality and adequacy of flows</li> </ul> </li> </ul>
<b>Reservoir Alternatives</b>	
Laurel Fork and Buzzard Branch	<ul style="list-style-type: none"> <li>• Presence of Federally-listed Threatened or Endangered species (Cumberland Bean Pearly Mussel)</li> <li>• Outstanding Resource Water (ORW) designation</li> </ul>
Laurel Fork and McCammon Branch	<ul style="list-style-type: none"> <li>• Presence of Federally-listed Threatened or Endangered species (Cumberland Bean Pearly Mussel)</li> <li>• ORW designation</li> </ul>
Horse Lick Creek	<ul style="list-style-type: none"> <li>• Presence of Federally-listed Threatened or Endangered species (Cumberland Bean Pearly Mussel)</li> <li>• ORW designation</li> </ul>
South Fork of Station Camp Creek and Rock Lick	<ul style="list-style-type: none"> <li>• Wild and Scenic Study River designation of South Fork</li> </ul>
South Fork of Station Camp Creek and Cavanaugh Creek #2	<ul style="list-style-type: none"> <li>• Wild and Scenic Study River designation of South Fork</li> </ul>

South Fork of Station Camp Creek and Cavanaugh Creek	<ul style="list-style-type: none"> <li>• Wild and Scenic Study River designation of South Fork</li> </ul>
McCammon Branch	<ul style="list-style-type: none"> <li>• Presence of Federally-listed Threatened or Endangered species (Cumberland Bean Pearly Mussel) downstream</li> <li>• Downstream feeds into waters with ORW designation</li> </ul>
Mill Creek	<ul style="list-style-type: none"> <li>• Presence of Federally-listed Threatened or Endangered species (Cumberland Bean Pearly Mussel) downstream</li> <li>• Stream waters feed into waters with ORW designation</li> <li>• Insufficient yield for Jackson County during worst drought conditions; Insufficient sustainable yield for Jackson County and the region</li> </ul>
War Fork and Alcorn Branch	<ul style="list-style-type: none"> <li>• Wild and Scenic Study River designation of included portion of War Fork</li> </ul>
South Fork of Station Camp Creek and War Fork	<ul style="list-style-type: none"> <li>• Wild and Scenic Study River designation of South Fork</li> </ul>
Travis Creek	<ul style="list-style-type: none"> <li>• Insufficient yield</li> </ul>
<p>* Revised cost estimates for pipelines from the Wood Creek Water District water distribution system and from Lock 14 of the Kentucky River were prepared for this FEIS. Based on a simple comparison of the estimated costs of construction and operation of these pipelines, and on the distances over which the Wood Creek Lake and Lock 14 pipelines would travel, rough construction and operation costs were projected for the Buckhorn Lake and Laurel Lake alternatives. Construction and operation of a pipeline from Buckhorn Lake is projected to cost well over \$10 million more than either the Wood Creek Lake or Lock 14 pipelines. Construction and operation of a pipeline from Laurel Lake is project to cost well over \$6 million more than either the Wood Creek Lake or Lock 14 pipelines. These costs suggest that these alternatives would not be a cost-effective.</p> <p>**Water conservation alone has been eliminated as a reasonable alternative to entirely meet the projected water needs for Jackson County and the region. However, in the revised water needs analysis presented in the FEIS, a water conservation factor of 10 percent was determined reasonable for incorporation into the revised water needs projections.</p>	

In the DEIS, three alternatives were proposed for meeting the stated purpose and need, and are evaluated in the DEIS along with the No Action alternative. All three of these alternatives consist of the construction of a RCC dam to create a reservoir, and the construction of a raw water transmission main from the proposed reservoir to the JCWA Treatment Plant. These dam and reservoir alternatives include the: War Fork and Steer Fork, 3.5 mgd alternative; Sturgeon Creek, 8.5 mgd alternative; and Sturgeon Creek, 3.5 mgd alternative.

As stated above, various reservoir and non-reservoir alternatives were reassessed for the FEIS for their capability of meeting the revised projected water needs of Jackson County and the region. As a result of this reassessment, two additional, smaller dam and reservoir alternatives were determined reasonable for further study in the FEIS: the War Fork and Steer Fork, 1.3 mgd and 2.2 mgd alternatives. In addition to these two additional dam and reservoir alternatives, two alternatives previously eliminated from further consideration were reevaluated and determined to be reasonable for investigation in this FEIS. These alternatives consist of the construction of a water transmission pipeline from existing surface water resources in neighboring counties for the purposes of importing water to supply Jackson County. These are the Wood Creek Lake pipeline alternative and the Lock 14 pipeline alternative. All alternatives are further described below.

In regards to the project costs discussed below for each alternative, it should be noted that a review of present worth analysis of operation, maintenance, and replacements conducted for each alternative revealed that an inaccurate discount rate (five percent) was used in the calculations. The discount rate used for the analysis must comply with the Office of Management and Budget's Circular A-94. The 30-year real discount rate is currently 4.2 percent, and is updated annually. Use of this somewhat lower rate would result in slightly higher present worth costs for operation, maintenance, and replacement, and thus slightly higher total project costs, for each alternative than are presented below. However, application of this lower discount rate across all alternatives would not change the relative ranking of alternatives by cost.

### **War Fork and Steer Fork, 3.5 mgd**

The proposed War Fork and Steer Fork dam site is located approximately 0.5 air miles southwest of Turkey Foot Campground in eastern Jackson County. The dam would be situated on War Fork, 0.5 air miles north of the confluence with Steer Fork. The dam at this site would have an approximate height range of 87 to 107 feet, a length range of 760 to 790 feet, and a width range of 102 to 122 feet. At a normal pool elevation of approximately 980 feet above mean sea level (MSL), the surface area of the impoundment would be approximately 116 acres, with a storage capacity of 4,414 acre-feet (1.438 billion gallons (BG)). The drainage area for this reservoir would be 10.85 square miles. This reservoir would provide an average yield of 3.5 mgd of raw water.

At a potential maximum flood elevation of 1,000 feet above MSL, the surface area of the proposed reservoir would be approximately 162 acres. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 337 acres of land. Much of this land is currently part of the Daniel Boone National Forest (DBNF). Implementation of the project at this site would require either a land exchange with the U.S. Forest Service (USFS), issuance of a Special Use Permit (SUP) by the USFS, or a combination of these two actions. A separate NEPA analysis would be required for the USFS to enter into a land exchange or to issue an SUP.

According to the revised cost estimates prepared for the FEIS, the total project cost for the War Fork and Steer Fork, 3.5 mgd alternative is estimated to be about \$10,600,000. This total project cost includes costs of land acquisition of the privately-owned land within the project area, utility relocations, administrative and legal issues, environmental and preliminary engineering, site work, and the construction costs for the dam, reservoir, and the raw water transmission main. Costs of constructing the recreation facilities and associated infrastructure for these facilities at this site are not included in these estimates. The revised total present worth of operation and maintenance of the water main for 50 years would be approximately \$1,624,000. Therefore, the total cost of the project at the War Fork and Steer Fork, 3.5 mgd site, including the 50-year operation and maintenance costs of the water transmission facilities, would be \$12,224,000.

In order to compare project costs across all alternatives, the cost of the JCWA Treatment Plant expansion project and the present worth of treating raw water from the proposed War Fork and Steer Fork, 3.5 mgd reservoir would have to be incorporated to determine the total project costs. Incorporating these costs results in a total project cost of \$20,364,000.

### **Sturgeon Creek, 8.5 mgd**

The proposed Sturgeon Creek, 8.5 mgd dam site is located near the Jackson/Owsley County boundary line in eastern Jackson County, approximately 1.5 miles northeast of the community of Mummie. The dam would be situated on Sturgeon Creek just below the confluence with Blackwater Creek. The dam at this site would have an approximate height range of 84 to 100 feet, a length range of 825 to 850 feet, and a width range of 99 to 115 feet. At a normal pool elevation of about 990 feet above MSL, the surface area of the impoundment would be approximately 467 acres, with a storage capacity of 11,007 acre-feet (3.586 BG). The drainage area for this reservoir would be 21.23 square miles. This reservoir would provide an average yield of 8.5 mgd. Due to this greater yield, a reservoir at this site might be used as a regional water supply source to serve the needs not only of Jackson County, but also of neighboring counties.

At a potential maximum flood elevation of 1,010 feet above MSL, the surface area of the reservoir would be approximately 740 acres. The total area for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 1,119 acres. All of this land is currently privately-owned. Implementation of the project at this site would require the relocation of residents currently living on the project site and the demolition or relocation of existing structures in this area, including homes, barns, and outbuildings. There would also be connected actions associated with the project at this site, such as plugging water and oil wells in the project area, closing existing septic and storage tanks, and relocating roadways, such as KY 30.

According to the revised costs estimates prepared for the FEIS, the total project cost for the Sturgeon Creek, 8.5 mgd alternative is estimated to be about \$25,790,000. This total project cost includes costs of land acquisition, including acquisition of the land within the buffer zone and maximum flood areas; utility, residential, and cemetery relocations; administrative and legal issues; environmental and preliminary engineering; site work; and the construction costs for the dam, reservoir, raw water transmission main, and a 5.0 mgd transmission main leading from the proposed reservoir to the City of Manchester's Water Treatment Plant. Costs of constructing the recreation facilities and associated infrastructure for these facilities at this site are not included in these estimates. The revised total present worth of operation and maintenance of the water main for 50 years would be approximately \$3,952,000. Therefore, the total cost of the project at the Sturgeon Creek, 8.5 mgd site, including the 50-year operation and maintenance costs of the water transmission facilities, would be \$29,742,000.

In order to compare project costs across all alternatives, the cost of the JCWA Treatment Plant expansion project and the present worth of treating raw water from the proposed Sturgeon Creek, 8.5 mgd reservoir would have to be incorporated to determine the total project costs. Although the cost of expanding the JCWA Treatment Plant would be the same across alternatives, the present worth for treating raw water was not calculated for this alternative.

**Sturgeon Creek, 3.5 mgd**

The proposed Sturgeon Creek, 3.5 mgd dam site is located near the Jackson/Owsley County boundary line in eastern Jackson County, approximately 1.5 miles east-northeast of the village of Mummie. The dam would be situated on Sturgeon Creek approximately 0.6 miles above the confluence with Blackwater Creek, and approximately 0.8 miles upstream of the Sturgeon Creek 8.5 mgd dam site. The dam at this site would have an approximate height range of 64 to 67 feet, a length range of 500 to 600 feet, and a width range of 104 to 107 feet, due to the allowance for a potential road to be constructed across its top. At a normal pool elevation of 980 feet above MSL, the surface area of the impoundment would be about 264 acres, with a storage capacity of 4,446 acre-feet (1.449 BG). The drainage area for this reservoir would be 15.62 square miles. This reservoir would provide an average yield of 3.5 mgd.

At a potential maximum flood elevation of 1,000 feet above MSL, the surface area of the proposed reservoir at the Sturgeon Creek, 3.5 mgd site would be approximately 440 acres. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 643 acres of land. All of this land is currently privately-owned. Implementation of the project at this site would require the relocation of residents currently living on the project site and the demolition or relocation of existing structures in this area, including homes, barns, and outbuildings. There would also be connected actions associated with the project at this site, such as plugging water and oil wells in the project area, closing existing septic and storage tanks, and relocating roadways, such as KY 30.

According to the revised costs estimates prepared for the FEIS, the total project cost for the Sturgeon Creek, 3.5 mgd alternative is estimated to be about \$11,991,000. This total project cost includes costs of land acquisition, including acquisition of the land within the buffer zone and maximum flood areas; utility, residential, and cemetery relocations; administrative and legal issues; environmental and preliminary engineering; site work; and the construction costs for the dam, reservoir, and the raw water transmission main. Costs of constructing the recreation facilities and associated infrastructure for these facilities at this site are not included in these estimates. The revised total present worth of operation and maintenance of the water main for 50 years would be approximately \$1,295,000. Therefore, the total cost of the project at the Sturgeon Creek, 3.5 mgd site, including the 50-year operation and maintenance costs of the water transmission facilities, would be \$13,286,000.

In order to compare project costs across all alternatives, the cost of the JCWA Treatment Plant expansion project and the present worth of treating raw water from the proposed Sturgeon Creek, 3.5 mgd reservoir would have to be incorporated to determine the total project costs. Incorporating these costs results in a total project cost of \$21,426,000.

**No Action**

For the purposes of this EIS, two definitions of the No Action alternative were analyzed. The first definition, identified as the No Change alternative in this EIS, describes a situation in which nothing is done to meet the projected water and recreation needs of Jackson County. As the No Change alternative was determined to be unreasonable due to the documented need for water in

Jackson County, a second definition, identified as in this EIS as the No Action alternative, was also analyzed. The No Action alternative assumes that, although a dam and reservoir would not be constructed to meet the projected needs of Jackson County, other activities would occur to increase the current water supply, although in insufficient amounts to meet the projected needs. These activities may include drilling additional water wells throughout Jackson County, constructing water transmission lines from existing resources, such as intermittent streams, within the County, to the JCWA Treatment Plant, or water conservation.

### **War Fork and Steer Fork, 1.3 mgd**

The proposed War Fork and Steer Fork, 1.3 mgd dam site is located approximately 0.5 air miles southwest of Turkey Foot Campground, in eastern Jackson County. The dam at this site would be situated on War Fork, approximately 0.5 air miles north of the confluence with Steer Fork. The proposed dam at the War Fork and Steer Fork, 1.3 mgd site would be situated in the same location as the proposed dam at the War Fork and Steer Fork, 3.5 mgd site. In addition, the boundaries of the proposed War Fork and Steer Fork, 1.3 mgd site lie completely within those of the War Fork and Steer Fork, 3.5 mgd site.

The dam at the proposed War Fork and Steer Fork, 1.3 mgd project site would have an approximate height of 61 feet. At a normal pool elevation of 946 feet above MSL, the surface area of the impoundment would be approximately 65 acres, with a storage capacity of 1,728 acre-feet (0.563 BG). The drainage area for this reservoir would be 10.85 square miles. This reservoir would provide an average yield of 1.33 mgd.

The potential maximum flood level of the proposed War Fork and Steer Fork, 1.3 mgd reservoir would lie at an approximate elevation of 966 feet above MSL. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 215 acres of land. Much of this land is currently part of the DBNF. Implementation of the project at this site would require either a land exchange with the USFS, issuance of an SUP by the USFS, or a combination of these two actions. A separate NEPA analysis would be required for the USFS to enter into a land exchange or to issue an SUP.

The total project cost for the War Fork and Steer Fork, 1.3 mgd alternative is estimated to be about \$6,762,000. This total project cost includes costs of land acquisition of the privately-owned land within the project area, utility relocations, administrative and legal issues, environmental and preliminary engineering, site work, and the construction costs for the dam, reservoir, and the raw water transmission main. Costs of constructing the recreation facilities and associated infrastructure for these facilities at this site are not included in these estimates. The total present worth of operation and maintenance of the water main for 50 years would be approximately \$1,022,000. Therefore, the total cost of the project at the War Fork and Steer Fork, 1.3 mgd site, including the 50-year operation and maintenance costs of the water transmission facilities, would be \$7,804,000.

In order to compare project costs across all alternatives, the cost of the JCWA Treatment Plant expansion project and the present worth of treating raw water from the proposed War Fork and

Steer Fork, 1.3 mgd reservoir would have to be incorporated to determine the total project costs. Incorporating these costs results in a total project cost of \$14,188,000.

### **War Fork and Steer Fork, 2.2 mgd**

The proposed War Fork and Steer Fork, 2.2 mgd dam site is located approximately 0.5 air miles southwest of Turkey Foot Campground, in eastern Jackson County. The dam at this site would be situated on War Fork, approximately 0.5 air miles north of the confluence with Steer Fork. The proposed dam at the War Fork and Steer Fork, 2.2 mgd site would be situated in the same location as the proposed dam at the War Fork and Steer Fork, 3.5 mgd site. In addition, the boundaries of the proposed War Fork and Steer Fork, 2.2 mgd site lie completely within those of the War Fork and Steer Fork, 3.5 mgd site.

The dam at the proposed War Fork and Steer Fork, 2.2 mgd project site would have an approximate height of 75 feet. At a normal pool elevation of 960 feet above MSL, the surface area of the impoundment would be approximately 88 acres, with a storage capacity of 2,780 acre-feet (0.906 BG). The drainage area for this reservoir would be 10.85 square miles. This reservoir would provide an average yield of 2.19 mgd.

The potential maximum flood level of the proposed War Fork and Steer Fork, 2.2 mgd reservoir would lie at an approximate elevation of 980 feet above MSL. The total acreage for a reservoir at maximum flood level at this site, with a 300-foot buffer extending from normal pool level, would be approximately 275 acres of land. Much of this land is currently part of the DBNF. Implementation of the project at this site would require either a land exchange with the USFS, issuance of an SUP by the USFS, or a combination of these two actions. A separate NEPA analysis would be required for the USFS to enter into a land exchange or to issue an SUP.

The total project cost for the War Fork and Steer Fork, 2.2 mgd alternative is estimated to be about \$8,294,000. This total project cost includes costs of land acquisition of the privately-owned land within the project area, utility relocations, administrative and legal issues, environmental and preliminary engineering, site work, and the construction costs for the dam, reservoir, and the raw water transmission main. Costs of constructing the recreation facilities and associated infrastructure for these facilities at this site are not included in these estimates. The revised total present worth of operation and maintenance of the water main for 50 years would be approximately \$1,337,000. Therefore, the total cost of the project at the War Fork and Steer Fork, 2.2 mgd site, including the 50-year operation and maintenance costs of the water transmission facilities, would be \$9,631,000.

In order to compare project costs across all alternatives, the cost of the JCWA Treatment Plant expansion project and the present worth of treating raw water from the proposed War Fork and Steer Fork, 2.2 mgd reservoir would have to be incorporated to determine the total project costs. Incorporating these costs results in a total project cost of \$16,723,000.

### **Wood Creek Lake Pipeline**

Under the Wood Creek Lake Pipeline alternative, a water transmission pipeline would be constructed from the existing Wood Creek Water District 20-inch transmission main leading from Wood Creek Lake in northern Laurel County to the JCWA 10-inch main located south of the JCWA Treatment Plant for the purposes of importing treated water. The total distance that would be traveled by this pipeline is 119,500 linear feet, or 22.6 miles.

Wood Creek Lake in northern Laurel County has a surface area of approximately 680 acres at the normal pool level of 1,020 feet above MSL. The storage capacity of this lake at normal pool level is 24,400 acre-feet. The drainage area of the lake is about 15,000 acres (23.4 square miles). The Wood Creek Water District Treatment Plant currently has the capacity to treat 4.61 mgd. Plans are currently underway to upgrade the treatment plant to a capacity of 9.22 mgd.

A yield analysis was conducted for Wood Creek Lake to project potential yields of the reservoir under critical drought conditions and average conditions, assuming various withdrawals from the reservoir. The Wood Creek Water District currently withdraws and treats an approximate average of 4.00 mgd from Wood Creek Lake. This withdrawal results in an average-year storage capacity of 23,461 acre-feet. The maximum sustainable withdrawal from Wood Creek Lake is estimated to be 18.00 mgd. Such a withdrawal would result in an average-year storage capacity of 12,221 acre-feet and a critical-year storage capacity of 146 acre-feet. In order to limit seasonal water level fluctuation, and thus, sustain usage of the existing recreational facilities that surround Wood Creek Lake, such as fixed boat docks and boat ramps, the maximum recommended withdrawal from Wood Creek Lake is estimated to be 10.00 mgd. Such a withdrawal would result in an average-year storage capacity of 20,565 acre-feet and a critical-year storage capacity of 16,422 acre-feet.

Under this alternative, two pipeline capacities are investigated. A pipeline capable of transporting 1.33 mgd from Wood Creek Lake to the JCWA distribution system is examined for the purposes of supplying Jackson County only with water. A second pipeline, capable of transporting 2.19 mgd to the JCWA distribution system, is evaluated for the purposes of supplying Jackson County and the surrounding region with water.

The total project cost for the Wood Creek Lake, 1.33 mgd pipeline is estimated to be about \$7,636,000. This total project cost includes costs of land acquisition, administrative and legal issues, environmental and preliminary engineering, and the construction costs for the water transmission main. The total present worth of operation and maintenance of the water main for 50 years would be approximately \$1,816,000. Therefore, the total cost of the Wood Creek Lake, 1.33 mgd pipeline, including the 50-year operation and maintenance costs, would be \$9,452,000.

In order to compare project costs across all alternatives, the present worth of purchasing potable water from the Wood Creek Water District would have to be incorporated to determine the total project costs. Incorporating these costs results in a total project cost of \$16,213,000 for the Wood Creek Lake, 1.3 mgd pipeline alternative.

The total project cost for the Wood Creek Lake, 2.19 mgd pipeline is estimated to be about \$9,016,000. This total project cost includes costs of land acquisition, administrative and legal issues, environmental and preliminary engineering, and the construction costs for the water transmission main. The total present worth of operation and maintenance of the water main for 50 years would be approximately \$2,425,000. Therefore, the total cost of the Wood Creek Lake, 2.19 mgd pipeline, including the 50-year operation and maintenance costs, would be \$11,441,000. Incorporating the present worth of purchasing potable water from the Wood Creek Water District results in a total project cost of \$20,183,000 for the Wood Creek Lake, 2.2 mgd pipeline alternative.

### **Lock 14 Pipeline**

This alternative would consist of constructing a water transmission pipeline from an intake constructed at the existing Lock 14 of the Kentucky River at Heidelberg (Lee County) to Tyner Lake, for the purposes of importing raw water to be treated at the JCWA Treatment Plant. The total distance that would be traveled by this pipeline is 108,000 linear feet, or 20.5 miles.

Under this alternative, two pipeline capacities are investigated. A pipeline capable of transporting 1.33 mgd from Lock 14 of the Kentucky River to the JCWA Treatment Plant is examined for the purposes of supplying Jackson County only with water. A second pipeline, capable of transporting 2.19 mgd to the JCWA Treatment Plant, is evaluated for the purposes of supplying Jackson County and the surrounding region with water.

The total project cost for the Lock 14, 1.33 mgd pipeline is estimated to be about \$6,928,000. This total project cost includes costs of land acquisition, administrative and legal issues, environmental and preliminary engineering, and the construction costs for the water transmission main. The total present worth of operation and maintenance of the water main for 50 years would be approximately \$2,036,000. Therefore, the total cost of the Lock 14, 1.33 mgd pipeline, including the 50-year operation and maintenance costs, would be \$8,964,000.

In order to compare project costs across all alternatives, the cost of the JCWA Treatment Plant expansion project and the present worth of treating raw water imported from Lock 14 would have to be incorporated to determine the total project costs. Incorporating these costs results in a total project cost of \$15,368,000 for the Lock 14, 1.3 mgd pipeline alternative.

The total project cost for the Lock 14, 2.19 mgd pipeline is estimated to be about \$7,563,000. This total project cost includes costs of land acquisition, administrative and legal issues, environmental and preliminary engineering, and the construction costs for the water transmission main. The total present worth of operation and maintenance of the water main for 50 years would be approximately \$2,658,000. Therefore, the total cost of the Lock 14, 2.19 mgd pipeline, including the 50-year operation and maintenance costs, would be \$10,221,000. Incorporating the costs of the JCWA Treatment Plant expansion project and the present worth of treating raw water imported from Lock 14 results in a total project cost of \$17,313,000 for the Lock 14, 2.2 mgd pipeline alternative.

### **Preferred Alternative**

In the DEIS, both the RUS and the Jackson County Empowerment Zone asserted that their preferred alternative for meeting the purpose and need of the proposed action was the War Fork and Steer Fork, 3.5 mgd dam and reservoir alternative. After comparing project costs, user rates impacts, and future growth prospects of Jackson County and the surrounding region, and evaluating other relevant information with regard to the reasonable alternatives considered in the EIS, RUS has identified the War Fork and Steer Fork, 3.5 mgd dam and reservoir alternative as their preferred alternative. The Jackson County Empowerment Zone concurs.

### **MAJOR CONCLUSIONS**

A summary of potential environmental and human health and safety impacts, which are rated as moderately significant or very significant according to the criteria provided in Appendix C of the EIS, is provided below. Significant potential impacts that are common among alternatives are discussed first. Those potential impacts that are specific to a particular type of action alternative (dam and reservoir alternative or pipeline alternative) are discussed after the general discussion. Where potential impacts are specific to a particular alternative within an action group, they are discussed on a site-specific basis.

Many of the potential impacts resulting from each alternative were rated as insignificant according to the criteria provided in Appendix C of this EIS. It should be noted, however, that even though an impact may be given the same rating for each alternative, there are incremental differences among alternatives, based on such factors as the size and location of the project area. In addition, many of the adverse impacts on environmental resources or human health and safety resulting from the proposed action could be minimized or avoided using recommended mitigation measures during certain phases of the project.

Construction activities of all action alternatives would result in a moderately significant increase in soil erosion, and a temporary degradation of the visual quality of the area surrounding the construction zones. All action alternatives, regardless of action type, would result in very significant benefits to health and economic conditions within Jackson County due to the provision of additional water supplies, including moderately significant increases in business development within the County. In addition, all action alternatives would result in a moderately significant, adverse increase in residential water user rates. These anticipated increases are presented in the table below by alternative.

It should be noted that review of the methodology used to estimate the impacts on water user rates resulting from the alternatives noted inconsistencies in items that could potentially affect the ranking of alternatives. Inconsistencies were found for the following parameters: water purchase costs from Wood Creek Water District, JCWA water treatment costs, and the comparative lengths of the useful lifetime of the reservoir and water transmission pipeline alternatives. As a result of these inconsistencies, sample calculations were carried out using adjusted factors, including extreme values. For these calculations, the discount rate was changed to 4.2 percent for all trials, as discussed above. It was concluded from these calculations that the ranking of the alternatives, as per their impact on water user rates, is not highly sensitive to these

parameters. In other words, even when the most extreme values of these parameters were used for the calculations, the ranking of alternatives in terms of impacts on water user rates did not change.

<b>Impacts on Typical Residential Water Rates Under Each Alternative*</b>			
<b>Alternative</b>	<b>Average Monthly Bill</b>	<b>Increased Cost for Average Monthly Bill</b>	<b>% Increase over Existing Rates</b>
No Action (existing rates)	\$25.02	Not applicable	Not applicable
War Fork, 3.5 mgd	\$32.05	\$7.03	28.16%
War Fork, 2.2 mgd	\$30.45	\$5.44	21.72%
War Fork, 1.3 mgd	\$29.33	\$4.31	17.29%
Sturgeon Creek, 3.5 mgd	\$32.87	\$7.85	31.38%
Wood Creek Lake Pipeline, 2.2 mgd	\$33.31	\$8.30	33.17%
Wood Creek Lake Pipeline, 1.3 mgd	\$32.23	\$7.21	28.81%
Lock 14 Pipeline, 2.2 mgd	\$30.56	\$5.54	22.19%
Lock 14 Pipeline, 1.3 mgd	\$30.02	\$5.00	20.04%

\*Based on an average monthly JCWA residential bill of \$25.02 for 4,517 gallons of water.

### **Dam and Reservoir Alternatives**

All dam and reservoir alternatives would result in moderately significant, short- and long-term harm to aquatic biota and riparian vegetation due to altered water quality and reduced water flows downstream of the proposed dam. The presence of the proposed reservoir would result in a moderately significant, adverse impact on small terrestrial and aquatic mammals, amphibians, and reptiles from permanent blockage of migration. In addition, all dam and reservoir alternatives would result in the conversion of waters of the United States from a flowing condition to a standing condition, an impact which has been rated moderately significant.

Moderately significant changes in property values in the vicinity of the proposed reservoir, and increases in the assessments of new lakefront land, are expected to result from each alternative. All dam and reservoir alternatives would result in moderately significant, permanent alterations of existing land uses within the project area. Such alterations may result in conflicts involving land ownerships or easements, an impact which has been rated as moderately significant.

All dam and reservoir alternatives would result in a very significant, beneficial increase in recreational opportunities for Jackson County and the region. In addition, the appearance of the proposed reservoir would have a very significant, positive impact on the visual quality of the area.

### **War Fork and Steer Fork Alternatives (3.5 mgd, 2.2 mgd, and 1.3 mgd)**

Implementation of any of the proposed War Fork and Steer Fork alternatives would result in a moderately significant loss of Prime Farmland within Jackson County. Construction of the dam at War Fork and Steer Fork would result in a short-term, moderately significant degradation of

downstream water quality due to sedimentation and turbidity. Over the long-term, a moderately significant, adverse reduction of dissolved oxygen and elevation of summer water temperatures downstream of the proposed dam would be expected. Impoundment of the reservoir at the War Fork and Steer Fork site would result in a moderately significant, adverse reduction in flows on the Wild and Scenic Study River segment downstream of the proposed dam and reservoir. Long-term reductions in downstream flows due to water withdrawals from the reservoir would be moderately significant for the War Fork and Steer Fork, 3.5 mgd and 2.2 mgd alternatives.

Moderately significant, short- and long-term reductions in recreational opportunities within and downstream of the proposed project area would result from implementation of any of the War Fork and Steer Fork alternatives. In addition, the appearance of the proposed dam at this site would result in a moderately significant, long-term, adverse impact on the visual quality of the area, particularly for users of Turkey Foot Campground downstream.

#### Sturgeon Creek Alternatives (8.5 mgd and 3.5 mgd)

Implementation of the project at either of the proposed Sturgeon Creek sites would result in a very significant loss of Prime Farmland within Jackson County. The potential to adversely affect cultural resources as a result of the project at either of the Sturgeon Creek sites would be moderately significant to very significant. Moderately significant, adverse impacts on environmental conditions in and around the reservoir at either of the Sturgeon Creek sites would be expected as a result of current land uses. In addition, construction of the dam and reservoir at either of the Sturgeon Creek sites would require the relocation of a segment of KY 30, which has been rated as a moderately significant impact on transportation.

Due to the proximity of the proposed dam at the Sturgeon Creek sites to downstream residences, a potential catastrophic failure of the dam would result in a moderately significant impact on human health and safety.

Disruption of local community structure and social relations would be expected as a result of the project at either the Sturgeon Creek sites, due to necessary residential relocations from the project area. This impact would be rated as very significant for the Sturgeon Creek, 8.5 mgd alternative, and moderately significant for the Sturgeon Creek, 3.5 mgd alternative. In addition, implementation of the project at either of the Sturgeon Creek sites would result in a very significant alteration of the local community, due to changes in demographic structure and land use.

#### Pipeline Alternatives

Construction of either of the pipeline alternatives would result in a short-term, moderately significant degradation of water quality due to turbidity, sedimentation, and/or the risk of POL or chemical spills at stream crossings. No additional recreation opportunities for Jackson County and the surrounding region would be provided by the pipeline alternatives, resulting in a very significant continued need for recreation in the area. Since the Jackson County Lake Project is one of many development goals of the Jackson County EZ Community, by not creating a reservoir in Jackson County, there would be a moderately significant potential to disrupt social

relations within the County, and/or to impede other development goals of the EZ. Differences in pipeline capacity (1.33 mgd or 2.19 mgd) would not result in significant differences in the potential impacts resulting from these alternatives.

Implementation of the Wood Creek Lake pipeline alternative may result in a moderately significant, adverse impact on existing recreational uses of Wood Creek Lake due to additional water withdrawals from the reservoir, and subsequent lake-level fluctuation. In addition, this alternative would put greater pressure on future water supply for the Wood Creek Water District.

### **No Action Alternative**

The No Action alternative would result in significant adverse impacts on recreation, human health and safety, socioeconomics, and environmental justice. Under the No Action alternative, the potential to adversely and disproportionately affect minority or low-income groups due to both further economic degradation and from adverse health impacts associated with an insufficient water supply would be very significant. A continued impediment to the growth of industry, residential development, and employment within Jackson County, as well as to other development goals of the EZ, are anticipated to result from this alternative. In addition, this alternative would provide no additional recreation opportunities for Jackson County and the surrounding region.

### **ISSUES TO BE RESOLVED**

Certain issues regarding the Jackson County Lake Project are still unresolved. Exact locations, sizes, and design details of the proposed dam and reservoir have not yet been determined, and would not be determined until a final location for the project is chosen. Although some of the proposed recreational facilities to be developed around the proposed reservoir are known, others remain speculative, and exact locations and sizes of these facilities are still unresolved.

A Section 404 (Clean Water Act (CWA)) permit would need to be obtained from the U.S. Army Corps of Engineers (USACE) in order for the proposed project to proceed at any of the alternative dam and reservoir sites, due to the presence of jurisdictional waters into which fill material would be discharged during construction of the dam. For actions in which the USACE is the permitting agency, the analysis of alternatives must meet the requirements for evaluation of alternatives set forth under the Section 404 (b)(1) Guidelines. According to USACE review of this EIS, in order to satisfy the requirements of the Section 404 (b)(1) Guidelines for the evaluation of alternatives, this EIS would need to be supplemented with additional information during the 404 permitting process. In addition, in accordance with Section 404 of the CWA, compensatory mitigation would likely be needed for discharge of fill into the waters of the United States. Compensatory mitigation could be accomplished by stream restoration or enhancement. Alternatively, in-lieu-of payments could be paid by the applicant to the USACE, a third party, or a restoration fund.

In order to achieve compliance with Section 106 of the National Historic Preservation Act (NHPA), a Memorandum of Agreement (MOA) would be developed and signed by the Kentucky Heritage Council (KHC), the Kentucky State Historic Preservation Officer (SHPO), and RUS.

This MOA would concern a phased identification approach for investigating the reservoir site, if a reservoir is chosen as the action to be taken. Examination of the proposed water transmission pipeline route, leading either from one of the proposed reservoirs or from an existing source of surface water, would likely be required to determine its archaeological potential, particularly in areas that diverge from existing Kentucky Department of Transportation or County rights-of-way.

The Phase I archaeological survey conducted by Cultural Resources, Inc. for this EIS resulted in the discovery of one potentially significant archaeological site located on both of the Sturgeon Creek project areas. However, based on comments received from the KHC and the Kentucky SHPO on the DEIS, the KHC and the Kentucky SHPO disagree with the evaluation of this site. It is the opinion of the KHC and Kentucky SHPO that this site is not eligible for listing in the National Register of Historic Places and warrants no further work. Further investigation of this site would be decided in the MOA between RUS and the KHC.

As mentioned previously, if any of the War Fork and Steer Fork dam and reservoir sites is chosen as the final project location, either a land exchange with the USFS or issuance of an SUP by the USFS would be required. Details of this land exchange/SUP remain undetermined. The USFS may maintain management of the land under the proposed reservoir and within the proposed buffer zone surrounding the reservoir. Under this option, the Jackson County EZ Community would need to acquire the portion of the buffer zone that is currently privately-owned. Via a land exchange with the USFS, the Jackson County EZ Community could exchange an equal portion of this newly-acquired land for the land taken up by the proposed dam and appurtenant structures. The remainder of the privately-held portion of the buffer zone may be donated to the USFS, for their management. Under this option, an SUP would be acquired by the Jackson County EZ Community for the proposed reservoir, and potentially for the associated recreation facilities. An environmental assessment (EA) would have to be conducted by the USFS to determine the impacts of the proposal prior to issuance of the SUP. A separate NEPA analysis would also have to be prepared by the USFS on any land exchange necessary for this alternative. This EA would evaluate the environmental impacts of the various options for the land exchange.

A final option may not require a land exchange at all. Although the Jackson County EZ Community would still have to acquire the portion of the buffer zone that is currently privately-owned, an SUP to construct, operate, and maintain a dam and reservoir could be obtained from the USFS. As stated above, an EA would have to be conducted prior to USFS issuance of the SUP.

The War Fork and Steer Fork dam and reservoir alternatives, in particular, may be controversial because of the proximity of documented populations and hibernacula of the Federally-listed Endangered Indiana bat (*Myotis sodalis*) and Virginia big-eared bat (*Corynorhinus townsendii virginianus*), the location of a Wild and Scenic Study River segment immediately downstream, and the permanent flooding of publicly-owned forestland. Representatives of both the USFS and the U.S. Fish and Wildlife Service maintain that Indiana bats utilize forests at the War Fork and Steer Fork project site as foraging habitat.

No specimens of either Endangered bat species were captured during any of the mist-netting surveys conducted for this EIS at any of the proposed War Fork and Steer Fork or the Sturgeon Creek reservoir sites. However, the probable presence of two Indiana bats was detected in the summer of 2000 by Anabat analysis of bat calls in both of the proposed project areas. While no hibernacula on the War Fork and Steer Fork site have been found, and their occurrence there is considered highly unlikely, it is still possible that Indiana bats utilize suitable trees on-site for summer roosting and maternity colonies. However, the field surveys suggest that if the bats do occur on or near the proposed War Fork and Steer Fork project sites, they likely exist at low densities.

The only other Federally-listed species believed to be potentially present at both the proposed War Fork and Steer Fork and the Sturgeon Creek project sites, the running buffalo clover (*Trifolium stoloniferum*), was not discovered during field surveys of the project areas.

Implementation of the proposed project at either of the Sturgeon Creek dam and reservoir sites is anticipated to generate concern over residential relocations from the project area. Some residents may have special attachments to their land and/or homes, and may not wish to relocate. Many Jackson County residents, including some of those currently living on the Sturgeon Creek dam and reservoir sites, have expressed concern over the permanent loss of Prime Farmland and other important agricultural land that would result from implementation of the project either of those sites. Such land has particular significance for counties like Jackson that have a predominance of hilly terrain.

# JACKSON COUNTY LAKE PROJECT ENVIRONMENTAL IMPACT STATEMENT

For each item in the Table of Contents that appeared in the Draft Environmental Impact Statement (DEIS) for the Jackson County Lake Project, two page numbers are given here. The first page number refers to the location of that item in the DEIS, and is preceded by a “DEIS” notation. The second page number given for each item refers to its location in this Final EIS, and is preceded by a “FEIS” notation. For additional items present only in this FEIS, or for items present in only the DEIS, only a single page number is given.

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