

BILLING CODE 6717-01-M  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

*Attachment C*  
*Summersville Hydro*

City of Summersville ) Project No. 10813-011

NOTICE OF AVAILABILITY OF FINAL ENVIRONMENTAL ASSESSMENT

(October 17, 1996)

A final environmental assessment (FEA) is available for public review. The FEA is for an application an amendment to the license for the Summersville Hydroelectric Project (FERC No. 10813) to: (1) substitute two turbine/generator units for the four units in the license; (2) revise the project boundary to include 9.9 miles of new transmission line in place of the licensed 8-mile transmission line; and (3) delete license article 303. The project is located on the Gauley River in Nicholas County, West Virginia. The FEA finds that approval of the application would not constitute a major federal action significantly affecting the quality of the human environment.

The FEA was written by staff in the Office of Hydropower Licensing, Federal Energy Regulatory Commission. Copies of the EA can be viewed at the Commission's Reference and Information Center, Room 1C-1, 888 First Street, N.E., Washington, D.C., 20426. Copies can also be obtained by calling the project manager, Heather Campbell at (202) 219-3097.

Lois D. Cashell  
Secretary

FINAL ENVIRONMENTAL ASSESSMENT  
APPLICATION FOR AMENDMENT OF LICENSE  
SUMMERSVILLE HYDROELECTRIC PROJECT  
FERC PROJECT NO. 10813-011

WEST VIRGINIA

Federal Energy Regulatory Commission  
Office of Hydropower Licensing  
Division of Licensing and Compliance  
888 First Street, N.E.  
Washington, DC 20426

October 1996

DC-A-37

FINAL ENVIRONMENTAL ASSESSMENT  
FEDERAL ENERGY REGULATORY COMMISSION  
OFFICE OF HYDROPOWER LICENSING  
DIVISION OF LICENSING AND COMPLIANCE

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Project Name: Summersville Hydroelectric Project

FERC Project No. 10813-011

**A. APPLICATION**

1. Application type: Amendment of License
2. Date filed with the Commission: September 25, 1995 supplemented on April 23 and July 15, 1996
3. Applicant: City of Summersville (licensee)
4. Water body: Gauley River
5. River Basin: Kanawha
6. Nearest city or town: City (formerly Town) of Summersville
7. Counties: Nicholas and Fayette State: West Virginia

**B. PURPOSE AND NEED FOR ACTION**

On September 25, 1995, and supplemented on April 23 and July 15, 1996, the City (formerly Town) of Summersville (City or licensee) 1/ filed an application for amendment of the license for the Summersville Hydroelectric Project (FERC No. 10813) to: (1) substitute two turbine/generator units for the four units in the license; (2) revise the project boundary to include 9.9 miles of new transmission line in place of the licensed 8-mile transmission line; and (3) delete license article 303. The proposed amendment would not affect project capacity.

The licensee requested the amendment because the original proposal was not economically feasible. The licensee is reducing project costs by reducing the size of the powerhouse and its associated civil works. The changes in the route of the transmission line are needed in order to permit the licensee to reach a utility (Appalachian Power Company (APC)) which will purchase the power.

**C. PROPOSED ACTION AND ALTERNATIVES**

**1. Background**

In 1966, the U.S. Army Corps of Engineers (COE) constructed Summersville dam, a rockfill structure 393 feet high and 2,280 feet long, on the Gauley River in Nicholas County, West Virginia, for flood control. The Summersville Hydroelectric Project, to be located at the dam, would use water released from the dam.

1/ Noah Corporation (Noah Corp.) is acting as an agent for the licensee in this proceeding.

The Commission issued a license for the Summersville Hydroelectric Project on September 25, 1992. 2/ The project as licensed would consist of: (1) three penstocks, each 11 feet in diameter, connected to existing outlet conduits, and a fourth 3-foot diameter penstock, which extends from penstock No. 3 to the small turbine; (2) a powerhouse with three 24 megawatt (MW) and one 8 MW turbine/generators, for a total installed capacity of 80 MW; (3) a valve house with three large and one small Howell-Bunger valves; (4) a tailrace; (5) an 8-mile-long, 3-phase, 138-Kv transmission line; and (6) appurtenant facilities.

The Commission issued an environmental assessment (EA), evaluating the environmental impacts of the proposed project, on January 10, 1992. During preparation of the EA, consultation and comments were solicited from agencies and other entities that could be affected by the proposed project. When the Commission issued the license for the project in 1992, it included articles to mitigate, to the extent necessary, the environmental impacts of the project. On September 25, 1995, the City filed for the subject amendment of the license for the Summersville Hydroelectric Project.

**2. Proposed Action**

The licensee proposes to relocate the powerhouse from its current licensed location downstream of the dam to the bank of the Gauley River, and to replace the licensed three 24 MW and one 8 MW turbine-generators with two 40 MW turbine-generators. The total installed capacity of 80 MW would remain unchanged. The amended project, if approved, would also include one penstock, 15 feet in diameter, connected to one of the existing outlet conduits; a tailrace; and appurtenant facilities. Figure 1 shows the layout of the licensed project; Figure 2 shows the proposed amended facility.

The licensee proposes to revise the project boundary by replacing the 8-mile-long, 3-phase, 138-Kv transmission line with a 9.9-mile-long, 69-Kv transmission line that would run to the south to connect to the APC's substation. 3/ The maximum width of the transmission line right-of-way would be 80 feet. Where necessary, the licensee proposes to construct the

2/ See 60 FERC ¶ 61,291

3/ The licensee originally proposed a 9.6 mile long transmission line. The licensee filed a revision to this route in July 1996 to address comments from the Foulke Meadow Trust. No new property owners were affected. The specifics of this change are addressed later in this document in Section D.

transmission line with an H-type structure using wooden poles with a crossbar and tension braces of wood or metal. The separation between conductors would be 15 feet, 6 inches; the minimum separation between each conductor and the grounding wire located vertically along each pole would be 7 feet, 9 inches. In areas where it is practicable, the licensee would use single wooden poles to further reduce the right-of-way clearing and visibility. Single poles would be approximately 50 feet tall; double poles would be shorter than the single poles.

The licensee's proposed 9.9 mile transmission line route would start at the powerhouse and run east across the river, up the bank of the river to the top of the ridge where it would turn south across forested property. It would cross this area for approximately 3.2 miles where it would link with Highway 19. It would parallel Highway 19 on the west for approximately 1.5 miles and would then cross Highway 19 near Mt. Lookout Road. From this intersection, the transmission line would travel southeast across a forested area. The transmission line would cross the Meadow River and follow the right-of-way of the Chesapeake and Ohio Railroad for approximately 2.25 miles. It would then turn south to connect to the APC substation. (See Figure 3)

### 3. Action Alternative

No alternatives were identified for the proposed amendment to the powerhouse.

On September 24, 1996, the Mt. Lookout-Mt. Nebo Property Protection Association (Association) filed an alternative route to the proposed transmission line. As with the licensee's proposed route, the Association's route would begin at the powerhouse, cross the river and link with Highway 19. At the Mt. Lookout Road/Highway 19 intersection (where the licensee's proposed route would cross Highway 19 and head into a forested area), the Association's route would continue to follow Highway 19 for another 1.5 miles (a total of 3 miles). The transmission line would cross the Meadow River beneath the Highway 19 bridge and head southeast across a forested area for approximately 2.6 miles until it would turn south to connect to the APC substation. Based on the maps provided by the Association, the transmission line would be approximately 11.2 miles long. (See Figure 3)

### 4. No-action Alternative

Under the no-action alternative, the project would be constructed as authorized and would operate under the terms and conditions of the original license.

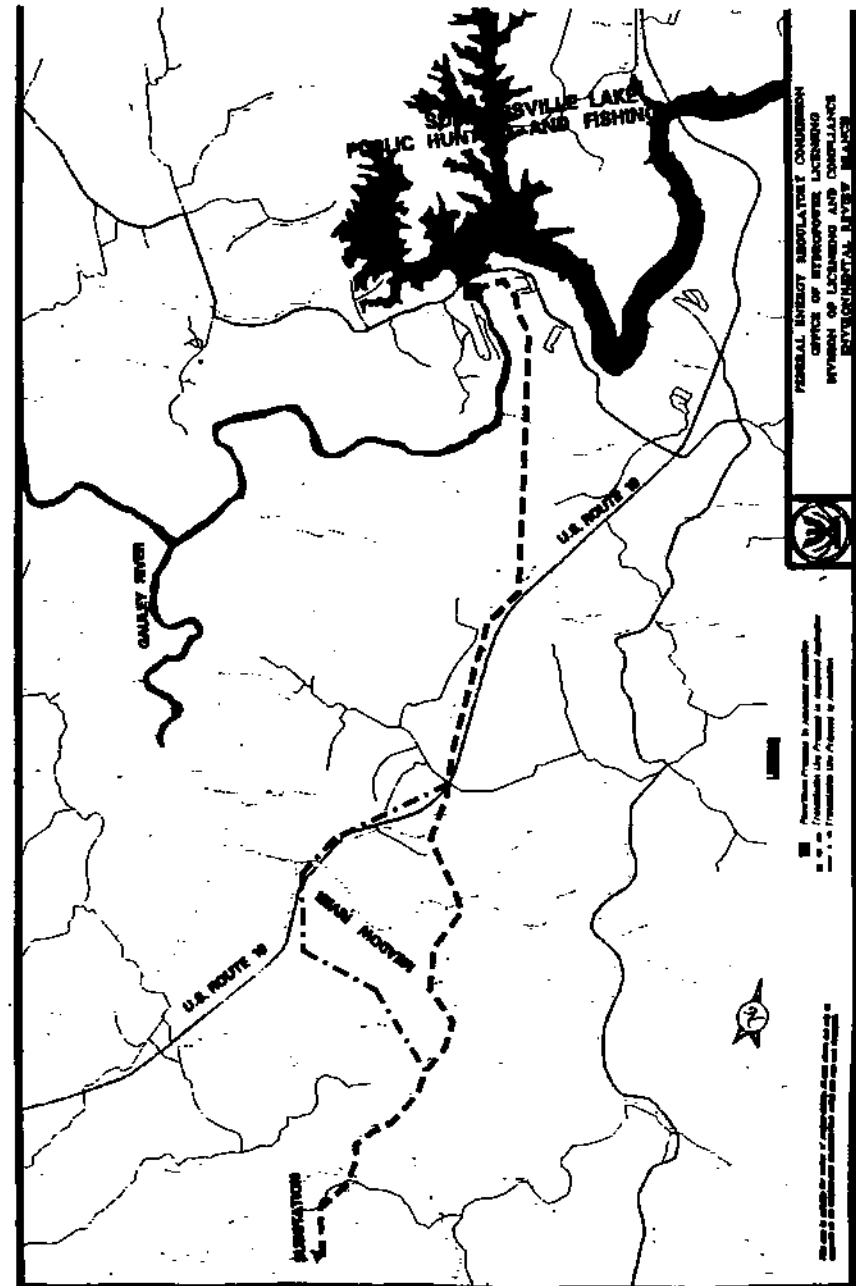


Figure 3

#### D. CONSULTATION AND COMMENTS

The licensee solicited and received comments from the following agencies:

<u>Commenting Entity</u>	<u>Date of Letter</u>
W.V. Division of Natural Resources (WVDNR)	June 13, 1995
W.V. Division of Environmental Protection Office of Water Resources	July 20, 1995
Department of the Interior, Office of Environmental Policy and Compliance	December 15, 1995
National Park Service (NPS)	July 31, 1995
	November 2, 1995
	March 22, 1996
	April 15, 1996
	May 22, 1996
U.S. Environmental Protection Agency	August 8, 1995
U.S. Army Corps of Engineers (COE)	August 28, 1995
W.V. Division of Culture and History (WVDCH)	August 30, 1995
	November 6, 1995
U.S. Fish and Wildlife Service (FWS)	August 31, 1995

None of the consulted agencies objects to the proposed amendment.

On October 23, 1995, a meeting was held among representatives of the following agencies and organizations: NPS; West Virginia Professional River Outfitters and Class VI River Runners, Inc.; Songer Whitewater, Inc.; North American River Runners; COE; West Virginia Whitewater Association (WVWA); American Whitewater Affiliation (AWA); and the City. The discussion centered on the design of the whitewater boat access. The minutes of this meeting were filed with the Commission on November 27, 1995.

As a result of a meeting with the NPS concerning the siting of the proposed transmission line in the Gauley River National Recreation Area (GRNRA), the licensee relocated portions of the proposed transmission line corridor off NPS land to avoid impacts to the recreation area. The licensee met with the NPS on April 4 and 5, 1996, to further discuss the transmission line route. In a letter dated April 15, 1996 to the Commission staff, the NPS concurred with the route proposed by the licensee in the April 4 meeting and April 5 field visit. This letter also included minutes of the meeting.

In a letter dated August 31, 1995, FWS commented that the proposed transmission line would not have an impact on the federally listed threatened shrub, Virginia spiraea, Spiraea virginiana.

A public notice on the proposed amendment was issued by the Commission on October 12, 1995. Comments were due on December 4, 1995. No comments were received.

The Draft Environmental Assessment was public noticed on April 29, 1996 with a comment date of May 28, 1996. Two comments were received on time. The NPS commented in a letter dated May 22, 1996. All the comments are addressed in the final document.

In a letter dated May 28, 1996, representatives of the Foulke Meadow River Lands Trust (Foulke Trust) filed comments regarding the transmission line crossing their property. Its concerns regard the impact on the Meadow River Gorge (Gorge) and the fact there is an operating deep mine under the Foulke Trust property. The licensee met with the representatives of the Foulke Trust on July 8, 1996 to discuss the transmission line route. The representatives sent the licensee a map of the preferred route. The licensee filed the new route across the Foulke Trust property (approximately 2.25 miles) on July 15, 1996. The revised route, which increased the length of the line 0.3 mile to 9.9 miles, deviated from the licensee's original proposal by a maximum of 500 feet. It follows part of an existing right-of-way for the Chesapeake and Ohio Railroad. 4/

In a letter dated June 5, 1996, a private citizen, whose property is along the transmission line right-of-way, stated he did not want the transmission line to cross his property. He further stated he was concerned about the aesthetics and endangered species in the area. On August 19, 1996, Jack C. McClung, an attorney, filed a request for late intervention on behalf of himself and the Association.

From June until September 20, 1996, several other property owners commented about the location of the transmission line route and construction of the project. Several property owners commented they did not want the project to be constructed. Other property owners, some of whom are directly impacted by construction of the transmission line on their property and others in the area, filed comments stating they did not want the transmission line constructed across the Gorge. They expressed concern about aesthetic and health issues.

The Commission staff held a public meeting in Summersville, West Virginia during the evening of September 19, to hear comments on the proposed amendment. The notice of the meeting was published in the local newspapers and copies of the notice

4/ It is this transmission line with the 2.25 mile long realignment across Foulke property that is assessed as the proposed action in this final environmental assessment.

were provided to all affected property owners identified by the licensee in its September 1995 amendment request.

#### E. AFFECTED ENVIRONMENT

The Summersville Hydroelectric Project is located on the Gauley River in Nicholas and Fayette Counties, West Virginia, between Summersville dam and the upper boundary of the GRNRA. <sup>5/</sup> In 1966, the COE constructed Summersville dam as a flood control structure on the Gauley River. The Summersville Hydroelectric Project would use flows released under the dam's current operating schedule.

##### 1. Geology and Soils

The Summersville Project is located in the Appalachian Plateau geologic province. The terrain in the area is rugged and characterized by sharp ridges and narrow v-shaped valleys. Soils on the valley slopes are shallow loam to silty clay loams. Soils in the lower lying areas near stream channels also include well-drained silty loams developed on alluvial deposits. The Gauley River does not have a floodplain in the project area (FERC, 1992).

##### 2. Water Resources

Summersville dam regulates water levels in Summersville reservoir and flows in the Gauley River downstream of the dam. All water (except for rare spillage flows during extreme floods) is released from Summersville Lake to the Gauley River through low-level outlets near the base of Summersville dam. Releases are controlled through Howell-Bunger valves that dissipate energy during the release. Changes in discharge rate are scheduled not to exceed 1,500 cubic feet per second (cfs) per hour or cause changes in water surface elevations downstream of the dam greater than 1 foot per hour. A minimum flow of 100 cfs is provided at all times.

The COE is required to provide 20 days of whitewater rafting flows each year beginning the first weekend after Labor Day. The flow is required for at least five four-day periods which include the weekends. During this period, the project operates by storing water in the reservoir until whitewater releases are required.

<sup>5/</sup> The GRNRA was created under Title II of the West Virginia National Interest River Conservation Act of 1987, Public Law 100-534, 102 Stat. 2699, which was enacted by Congress on October 26, 1988. The boundary of the GRNRA is located 550 feet downstream from the existing valve house. It is administered as a unit of the NPS.

WVDNR designates the Gauley River downstream of Summersville dam as a High Quality Stream and a National Resource Water. National Resource Waters and High Quality Streams are protected by West Virginia's Anti-degradation Policy (FERC, 1992).

The area below the dam to Collision Creek (about 1.8 miles) is classified as Trout Water by the WVDNR. The standard for dissolved oxygen (DO) concentrations immediately downstream of the proposed project is not less than 6.0 milligrams per liter (mg/l) at any time nor less than 7.0 mg/l in spawning areas. For Summersville Lake, the state DO concentration standard is not less than 5.0 mg/l at any time.

COE water samples collected between 1975 and 1988 indicate that DO ranged from 5.8 to 12.2 mg/l upstream of Summersville Lake. Downstream of the dam, DO ranged from 5.9 to 13 mg/l, averaging 9.7 mg/l (FERC, 1992). Water temperature below the dam averaged 60°F (maximum of 68°F) with water released from the hypolimnion of the lake. Aeration of water passing through the Howell-Bunger valves results in near-saturation to super-saturation DO levels such that violations of the state DO standard for the Gauley River rarely occur (FERC, 1992).

##### 3. Fisheries

The Summersville Lake fishery is diverse, primarily due to WVDNR stocking efforts, but the population size is low. Stocked game fish include rainbow, golden, and brook trout. Threadfin shad and brook silversides have been stocked as forage. The lake sustains a warmwater fishery for black bass and crappie. WVDNR is attempting to establish a two-story sport fishery at Summersville Lake by stocking deep water fish, such as lake trout. Other species identified in the lake include walleye, bluegill, channel catfish, and rock bass (FERC, 1992).

The Gauley River supports a diversity of warmwater and coolwater fish species. Thirty-four fish species have been identified in the river including darters, sunfish, minnows, catfish, trout, walleye, and American eel. Releases from the lower levels of the lake provide for continuous cold-to-cool water temperatures (average of 60°F) that enable the establishment of a year-round coldwater fishery for trout and walleye from the dam to the confluence with the Meadow River, approximately 5 miles downstream. WVDNR, through stocking, has established put-and-take trout fisheries downstream of the dam in the Gauley River (FERC, 1992).

##### 4. Terrestrial Resources (Vegetation and Wildlife)

Within the area of the dam and reservoir, locally dominant species vary. Areas cleared for the construction of Summersville dam have been invaded by black locust, pines, sassafras, red

mulberry, staghorn sumac, sourwood, black berry, raspberry, greenbrier, American holly, red cedar, and redbud. The area where the hydro facilities would be located was replanted or invaded by grasses and forbs following dam construction (FERC, 1992). Additional information on the terrestrial resources in the vicinity of Summersville dam and the licensed project works is discussed in Section V.C.4 of the original EA for this project (FERC, 1992).

A majority of the licensee's and Association's transmission line route is forested and undeveloped. There are two major right-of-ways in the area, Highway 19 and the Chesapeake and Ohio Railroad. There are also scattered logging and secondary roads.

The maximum width of the right-of-way would be 80 feet, but it would be narrower where possible. The route primarily traverses oak-hickory forests with several oak species, hickory, elm, and sweetgum the dominant species (Kuchler, 1964). Areas at lower elevations along waterways are dominated by sycamore and birch.

The licensee's and Association's transmission corridor would cross six wetland areas identified on the National Wetland Inventory (NWI) maps including: the Gauley and Meadow Rivers; two small streams, Collison Creek and Glade Creek; a small diked impoundment; and a diked farm pond. Both proposed transmission lines would avoid adversely impacting riverine and palustrine wetlands by spanning them to avoid placing poles in any wetland habitat. The Association's proposed route would cross the Meadow River under the existing Highway 19 bridge.

Typical animal species using the forest area crossed by the proposed transmission line corridor are small mammals and deer. Raptors would be expected to use transmission lines and structures for perches and nest building.

#### 5. Threatened and Endangered Species

There are no known federal or state listed or proposed animal species in the project area (letter from W.A. Tolin, FWS, to James B. Price, Noah Corp., August 31, 1995; letter from J.W. Rawson, WVDNR, to James B. Price, Noah Corp., June 13, 1995).

The project area, including the powerhouse, the licensee's proposed transmission line route and the Association's transmission line route is within the range of the Virginia spiraea (*Spiraea virginiana*), a rare shrub that is a federally listed threatened species known to occur in only 18 locations in five states. This species grows in disturbed habitats along the scoured banks of high gradient streams and in several areas in the vicinity of the proposed transmission corridors along the Gauley River and the Gorge.

#### 6. Land Use and Recreation

The amended project powerhouse would be located on the Gauley River, found eligible for inclusion in the National Wild and Scenic Rivers System in 1983, and considered one of the best whitewater rafting rivers in the United States (FERC, 1992). The most important and unique whitewater boating reach in the Gauley River Basin is the 25-mile section from the base of Summersville dam to the town of Swiss, West Virginia. This stretch is part of the GRNRA, which limits hydropower development to the licensed site of the Summersville Project (FERC, 1992). Whitewater boating contributes an estimated \$35 million annually to the West Virginia economy. There are at least 21 licensed outfitters that offer trips on the river, and an estimated 50,000 people boated the river in the 1995 season.

The Water Resources Act of 1986 (Public Law 99-662) established whitewater recreation as a project purpose of Summersville dam. The Act requires the COE to release a minimum of 2,500 cfs for at least 5 hours per day for 20 days over a six-week period beginning the first weekend after Labor Day.

Land uses in the proposed transmission line corridors include forest, a highway right-of-way, and pasture. Along the licensee's proposed route, about 75 percent of the corridor is forested and the rest is cleared for residential use or pasture. The proposed line would cross one four-lane highway (Highway 19) and one railroad (Chesapeake and Ohio). No residences are located within 200 feet of the corridor.

The licensee's proposed relocated 9.9 mile transmission line corridor route and powerhouse will affect federal (COE) and private property with a total area of 107.3 acres. Of that area, 15.2 acres are federal property (4.0 acres for the transmission line right-of-way and 11.2 for the powerhouse and appurtenant facilities) and 92.1 acres are private property (for the transmission line right-of-way). The licensee's proposed line crosses the Gorge.

The Gorge is used for hiking and other passive recreation. The Meadow River is used for kayaking and canoeing. It is bordered by private property on both sides. The Chesapeake and Ohio Railroad parallels the river on one side the entire length of the Gorge.

Based on review of available information, access into the Gorge is limited and is primarily across private property. The Meadow River in this reach is accessible by descending steep slopes where Highway 19 crosses the river within the GRNRA. Additional informal access is also available from Highway 41 which parallels the river approximately 5 miles upstream of the Highway 19 bridge.

The Association's route would be approximately 11.2 miles long and will affect COE and private property with a total area of approximately 119.2 acres. Of that area, approximately 15.2 acres are federal property and 104 acres are private property (for the transmission line right-of-way). A small portion of the line (less than 1 mile) would affect the GRNRA at the Meadow River.

#### 7. Aesthetics

The amended project powerhouse would be constructed at the base of Summersville dam on the Gauley River. Summersville dam and Summersville Lake dominate views from Route 129, which crosses the dam. The other dominant feature of the surrounding landscape is forest. The river corridor below the dam is within the boundaries of the GRNRA. Between the Summersville dam and the town of Swiss, the river corridor has been preserved in a nearly pristine state. The Gauley River was found to be eligible for inclusion in the National Wild and Scenic Rivers System in 1983, in part, due to its outstanding scenic value (FERC, 1992).

Upon leaving the switchyard, the licensee's rerouted transmission line would pass over the Gauley River immediately below the Summersville Dam. From there it would be visible to recreationists putting in rafts downstream in the GRNRA. For the remainder of the route, the line would pass primarily through undeveloped forested land, along Highway 19, and along an existing railroad right-of-way, although one portion passes through rural agricultural areas that are not heavily populated. The licensee's proposed route would cross the Meadow River in the Gorge and would be visible to recreationists (boaters and hikers). This area is characterized by steep slopes, rock outcroppings, and second growth forest. The Chesapeake and Ohio Railroad parallels the Meadow River in the Gorge. Highway 41 parallels the Meadow River approximately 5 miles upstream of the Highway 19 bridge crossing. The right-of-way of the transmission line would be a maximum width of 80 feet, except for the stretch adjacent to Highway 19 where it would be narrower.

The Association's route would affect the same area at the dam. It would parallel Highway 19 for approximately 3 miles as opposed to 1.5 miles for the licensee's route. The majority of the remaining route is forested. It would cross the Meadow River under the Highway 19 bridge.

The visual landscape of both routes is dominated by second growth timber, a state highway, a railroad, and steep slopes with numerous rock outcroppings.

#### 8. Cultural Resources

There are no known historic or archeological sites within the proposed amended project boundaries including the licensee's proposed transmission line corridor (letter from WVDCH, November 6, 1995; letter from the COE to Noah Corp., August 28, 1995).

No cultural resource surveys have been conducted for the 4.1 miles of the Association's route that differs from the licensee's proposed route. This 4.1 miles consists of 1.5 miles along Highway 19 and 2.6 miles across an area that has been disturbed by logging. Given the area has been disturbed by road construction and logging, it is unlikely construction of the transmission line would impact additional historic properties.

In addition, review of the National Register of Historic Places 1966-1994 indicates that there are no historic properties in either Fayette or Nicholas Counties in the vicinity of the project listed in the National Register of Historic Places which would be impacted by the construction of the transmission line. Should this be the chosen route, cultural resource surveys would have to be conducted prior to construction of the Association's transmission line pursuant to article 408 of the license. This article, in part, requires the licensee to consult with the WVSHPO before starting any land-clearing or land-disturbing activities within the project boundary not authorized in the license.

#### F. ENVIRONMENTAL IMPACTS

##### 1. Proposed Action

##### A. Geology and Soils

Overall, the amount of excavation required for construction of the amended project powerhouse would be less than that anticipated for the licensed project. The amended project would require only one cofferdam for construction of the powerhouse rather than the three-stage cofferdam planned for the licensed project. As a result, impacts on geology and soils, principally erosion and sedimentation, would be less than those expected for the licensed project.

The types of impacts from construction of the licensee's proposed transmission line would be similar to those from the licensed transmission line due to similar topography and vegetative cover. Because the licensee's proposed transmission line is approximately 1.9 miles longer than the licensed transmission line, more ground disturbance would occur.

In the original application for the licensed project, the licensee committed to implementing a Sediment and Erosion Control Plan during construction and operation to minimize turbidity, control erosion and dust, stabilize slopes, and avoid sediments and water pollutants (FERC, 1992). The Sediment and Erosion Control Plan that was required for the licensed project would also be required for the amended project. Implementation of the plan should minimize any of the short-term and temporary impacts that might occur during the construction or operation of the proposed facilities.

#### B. Water Resources

The proposed amendment to the license would not adversely impact current water quality. Under the licensed four-turbine configuration, the minimum and maximum hydraulic turbine capacity of the powerplant are 160 and 4,000 cfs. The amendment would not change the COE's scheduled releases at the dam or the maximum capacity of the project. However, the two larger turbines in the amended project would have higher minimum hydraulic capacity than the licensed 4-unit project. With the two-40 MW units, the minimum hydraulic capacity would be about 640 cfs. Thus, the range of operating flows is approximately 640 to 4,000 cfs.

As the project is currently licensed, at flows up to 160 cfs, the downstream minimum flows are supplied through the Howell-Bunger valves. Under the higher minimum hydraulic capacity of the proposed amended project, flows in the range of 160 to 640 cfs would pass through the Howell-Bunger valves instead of the project's turbines. For both the licensed and proposed amended projects, flows of 640 to 4,000 cfs would pass through the turbine. Water passing through the Howell-Bunger valves would be expected to reach saturated levels of DO.

Under the amended project, with more of the low flows (160 to 640 cfs) passing through the Howell-Bunger valves, we expect DO levels would be closer to saturation and higher than 7 mg/l more often than under the licensed condition. This would have a slightly beneficial effect on overall water quality. The greater oxygenation from the passage through the Howell-Bunger valves would aid in meeting the 7 mg/l required by the Water Quality Certificate and article 404 for the downstream reach of the Gauley River.

The DO monitoring and minimum tailrace DO of 7 mg/l required in article 404 of the existing license would be maintained and would continue to provide suitable DO levels to maintain and enhance fisheries and other aquatic life downstream of the project.

The licensee's proposed transmission line would span the river and stream crossings. As a result, there will be no

impacts to water quality from the licensee's proposed amended transmission line.

#### C. Fisheries

The potential for fish mortality, as a result of project operation, was reviewed in the original license EA. Studies for that document showed the proposed project would reduce passage of entrained fish through the existing Howell-Bunger valves as currently occurs by diverting flows through the project turbines (FERC, 1992). Because no fish survive passage through the Howell-Bunger valves, the licensed project was determined to reduce fish mortality. No fish passage mortality studies were required by the license (FERC, 1992).

The proposed project would be similar to the licensed project in its effects on fish mortality. The two proposed 40 MW turbine generators are likely to have similar mortality effects on entrained fish as the originally licensed 4 units. However, the effect of turbine size on fish survival during turbine passage is complicated by the different hydraulic capacities and expected operating efficiencies of the new units.

As discussed in Section F.1.B. (Water Resources), the new powerhouse would have a minimum hydraulic capacity of about 640 cfs compared to the 160 cfs minimum for the licensed 8 MW unit. Between 160 and 640 cfs, flows would pass through the Howell-Bunger valves instead of the project turbines. Eicher (EPRI, 1992) shows that for Francis turbine <sup>6</sup>/<sub>5</sub> projects with about 250 to 300 feet of head, fish passage mortality is about 30%, compared to the 100% mortality which is likely from passage through the Howell-Bunger valves. Therefore, when flows are in the 160 to 640 cfs range, fish passage mortality rates will be greater with the amended project than with the licensed project. Flows in this range occur between 23 and 41 percent of the time from June to September and 2 to 3 percent in October and November. <sup>7</sup>/<sub>7</sub>

EPRI (1992) also identifies other studies that show lower fish passage mortality at higher turbine efficiency settings. The use of 4 smaller turbines allows the project to operate at higher turbine efficiencies over a greater range of operating flows than is available with the amended project with two-40 MW units. Therefore, under the amended project, fish passage

<sup>6</sup>/<sub>7</sub> Francis turbines would be installed for the licensed project and are also proposed for the amended project.

<sup>7</sup>/<sub>7</sub> These percentages are derived from the supplemental information to the application for license filed March 2, 1990.



mortality is expected to be somewhat greater due to reduced turbine efficiency.

Finally, EPRI (1992) identifies narrow clearance between wicket gates and the leading and trailing edges of the runners as factors that can increase fish passage mortality. The size of wicket gate openings and spacing between the runners would be greater for the amended project than with the smaller units for the licensed project. Therefore, under the amended project, fish passage mortality is expected to be less due to larger clearances.

Important factors in entrainment include the location of the withdrawal, water velocities at the intake, and quantities of flow. In these respects, the design of the licensed project and amended project is equivalent. In the proposed amended project, the two larger units would use similar flows that would be withdrawn from the same location in the impoundment.

Overall, some factors of the amended project powerhouse will increase and some will decrease fish passage mortality from the licensed project. Impacts from the proposed amended project powerhouse would be less than the current situation without the project, where no fish survive passage through the Howell-Bunger valves.

The licensee's proposed transmission line would span the river and stream crossings which would result in no impacts to fisheries.

#### D. Terrestrial Resources

No additional vegetation and wildlife impacts would occur as a result of the proposed changes in the location of the powerhouse. The area that would be affected was previously disturbed from construction of the original dam.

Within the transmission line right-of-way, approximately 75 acres of forest, or 75 percent of its length, would need to be cleared of trees. The alignment proposed for the licensed project would have required the clearing of only 30 acres of forest. The additional 45 acres of clearing would have minor localized impacts on those species dependent on unsegmented forest stands but, given the extensive amount of forest cover in the two-county project area, the overall impact on wildlife would be minimal. Further, some species would benefit by the more diversified habitat associated with the edge habitat created along the periphery of the transmission line corridor.

The proposed transmission line would span wetlands in order to avoid the placement of poles in wetland habitat. As a result, transmission line construction and operation should have no

adverse effect on the wetlands it crosses other than the clearing of trees that could interfere with the line.

License article 405 requires the licensee to revegetate the transmission line right-of-way according to the Transmission Line Management Plan filed in its application for license. As part of the Transmission Line Management Plan required by article 405, the licensee would plant mast-bearing trees along the line and use only mechanical clearing (rather than herbicides) during construction and maintenance. These measures would adequately mitigate any adverse impacts to wildlife habitat in the area resulting from a loss of habitat or displacement during construction activity because of the additional habitat and food sources created by the clearing and new plantings.

Above-ground transmission lines are a potential electrocution hazard to perching raptors unless properly designed (Olendorff et al., 1981). Article 406 of the original license requires the licensee to design and construct the transmission line in accordance with guidelines set forth in "Suggested Practices for Raptor Protection on Power Lines -- the State of the Art in 1981," by the Raptor Research Foundation, Inc. After agency consultation, the licensee was required to file a Transmission Line Design Plan that considers the measures necessary to protect raptors from electrocution hazards. The licensee developed a Transmission Line Design Plan, including raptor protection, approved by the Commission and federal and state agencies (letter to James B. Price, Noah Corp., from FERC, August 9, 1994).

When implemented, the Transmission Line Design Plan would prevent the accidental electrocution of perching raptors. The licensee has not proposed to change the transmission line design from the way it was approved in the license for the double poles. The Transmission Line Design Plan calls for a design of an H-type structure using wooden poles with a crossbar and tension braces of wood or metal. The separation between conductors would be 15 feet, 6 inches; the minimum separation between each conductor and the grounding wire located vertically along each pole would be 7 feet, 9 inches. The licensee has proposed using single poles where practicable. Unless properly designed and constructed, the single pole could be an electrocution hazard to raptors. The licensee has not provided a design for the single pole construction.

#### E. Threatened and Endangered Species

According to WVDNR (letter from J.W. Rawson, Wildlife Resources Section, WVDNR, June 13, 1995) and FWS (letter from W.A. Tolin, FWS, August 31, 1995), the licensed transmission line corridor was in the vicinity of the federally listed threatened plant species, Virginia spiraea. This species is found below the

dam on the Gauley River and along the banks of the Meadow River.

Both agencies recommended that plant surveys be conducted. The licensee contracted with WVDNR to perform the surveys in the Gorge, and two small clusters were found. The licensee developed an avoidance plan that FWS approved in a letter dated August 11, 1995. The proposed route would cross the Gorge in only one place, which does not contain the threatened plant. FWS, in its August 31, 1995, letter, believes the construction and maintenance of the powerline in the licensee's proposed corridor location will not adversely affect Virginia spiraea and that no biological assessment or further Section 7 Consultation under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) is required.

Prior to any land clearing or construction of the new transmission line, the licensee plans to notify the FWS so that it can confirm the location and mark the populations of Virginia Spiraea. The transmission line will be placed as far from the populations as possible.

#### F. Land Use and Recreation

The proposed amended powerhouse would not have additional impacts on the planned recreation use of the project because the licensee must comply with mitigation measures required under license article 410. <sup>8/</sup> Article 410 requires the licensee to install a new whitewater raft launching facility and upgrade the access trail to the existing kayak launching area prior to land-disturbing activity. The licensee is also required to install a new restroom and changing facility, picnic tables, and interpretive and informational signage.

In addition, there should be less disturbance of bank fishing and boating activities during construction than would occur for the licensed project because there would be a smaller construction area.

As with the licensed project, the amended project would displace an existing whitewater boating access. In the original application for the project, the licensee proposed replacing the existing whitewater rafting put-in, and improving the existing kayak put-in before beginning project construction (FERC, 1992). In a meeting held on October 23, 1995, among Noah Corp., NPS,

<sup>8/</sup> License article 410 requires the licensee to implement measures contained in a Memorandum of Understanding (MOU) among the NPS, the City of Summersville and Noah Corp. The measures are designed to protect whitewater recreation and other recreational activities during and after project construction.

COE, WVWA, AWA, West Virginia Professional River Outfitters and Class VI River Runners, Inc., Songer Whitewater, Inc., WV PRO, and North American River Runners, Inc., to discuss the amended project, a new access site was identified and the general specifications for construction of the access and ancillary facilities (e.g., footpath, launch ramp) provided (letter from Noah Corp. to the Parties Addressed, November 2, 1995). Provision of the new whitewater rafting put-in and the improvements to the existing kayak put-in, required by article 410, would mitigate the displaced facilities.

The amended transmission line would be visible to recreationists including boaters and hikers in the Gorge, but would not preclude any recreational uses.

The right-of-way for the rerouted transmission corridor would traverse 4.0 acres of federal property (COE) and 92.1 acres of private property. While rerouting the transmission line to connect to the APC substation, the applicant has placed the corridor outside the GRNRA in order to avoid the potential negative visual impacts the overhead transmission lines could have on federally protected park land. As a result, more of the transmission line corridor would be located on private land.

Clearing and construction of the transmission line corridor will preclude certain uses such as forestry or construction of buildings. To minimize the impact, the licensee agreed to reduce the width of the transmission line through private property by using single poles. The licensee further states that the land under the transmission line may be used for pasture or wildlife habitat.

The transmission line route was shifted to follow an existing railroad right-of-way on the Foulke property for approximately 2.25 miles to minimize land-use conflicts, i.e. segmenting the timber lands or siting of poles on the underground mine (letter dated June 17, 1996 from Noah Corporation). <sup>9/</sup> The transmission line would not cause any subsistence problems on the mine. The siting of the poles is flexible so that it should be possible to avoid siting a pole over the mine. In addition, because of the relatively small size of the line, it will not substantially affect the ground above the mine.

#### G. Aesthetics

The proposed powerhouse would adversely affect aesthetic resources within the project area; however, the impact would be

<sup>9/</sup> This 2.25-mile realignment is part of the 9.9-mile-long transmission line being considered as the licensee's proposed route.

considerably less than would have occurred under the licensed project. Under the licensed project, thousands of whitewater boaters who access the river below the dam for recreation would have had unobstructed views of the licensed powerhouse from the whitewater put-in. The less visible amended powerhouse location represents an improvement over the more prominent and highly visible location proposed for the licensed project.

The relocation and reduction in the number of penstocks, from three in the licensed project to one in the amended design, also represents an aesthetic improvement over the licensed design. The reduction in impacts represented by the amended project is consistent with the Department of the Interior's objectives for the GRNRA of preserving and protecting the scenic resources of the lower Gauley (FERC, 1992).

During construction, boaters would also have views of the transmission line construction staging area. These views would be temporary because the sites will be restored and revegetated following completion of construction.

At the project powerhouse where the transmission line would begin and span the Gauley River, recreationists would have a view of the transmission line as it crosses the face of the dam. The licensee will construct the whitewater put-in and kayak access trail downstream of the dam and would plant trees and shrubbery to minimize the visual impacts.

Given that the area is heavily forested, the linear clearing of the transmission line would be noticeable, but the overall visual impact would be minor. The use of wooden poles and the narrowing of the corridor through sensitive areas should minimize the impact, to the extent possible, of the cleared transmission line. Because the poles would be approximately 50 feet tall, they should not be visually obtrusive in an area dominated by second growth timber.

The licensee's proposed transmission line would span the Gorge in an area upstream of the GRNRA. This area is dominated by forested slopes and rock outcroppings. The Chesapeake and Ohio Railroad also runs along the southwest bank of the Meadow River. Highway 19 crosses the river downstream of the licensee's proposed crossing. Approximately 1/2 mile of the transmission line right-of-way will be visible from the Meadow River before it turns northwest at the top of the slope. Boaters will have a view of this corridor only for a brief period as they raft beneath the transmission line. Hikers and fishermen will have a view of the transmission line only along the right-of-way, as this transmission line will not protrude above the existing vegetation. Given that a maximum of 80 feet of the shoreline (out of approximately 5.0 miles of the subject area of the Gorge from Highway 19 to Highway 41) will be cleared for the right-of-

way, the overall landscape character of the Gorge will not be significantly impacted. The licensee plans to minimize the impact by using single wooden poles which would blend with the existing forest and minimize the width of the corridor where practicable.

The construction of the transmission line is not inconsistent with other existing uses in the area such as the railroad, highways, and access roads for mining operations. The licensee has also agreed to place single poles on private property to reduce visual impacts. In addition, the licensee will plant mast-bearing trees along the corridor.

#### H. Cultural Resources

There are no known archeological sites within the COE boundaries that would be affected by the proposed project (letter from COE to Noah Corporation, August 28, 1995). The proposed transmission line was surveyed in September 1995. No archeological sites were located near the proposed route. The West Virginia State Historic Preservation Officer (WVSHPO) stated the project would have no effect on any archeological or historical sites listed on or eligible for inclusion in the National Register of Historic Places (letter from WVDCH to James B. Price, Noah Corp., November 6, 1995). Given that the July 1996 revision 10/ to the transmission line will be along an existing right-of-way which has been disturbed by construction of the railroad and where no archeological resources were found during the September 1995 survey, the revised transmission line route would not impact any historic properties.

License article 40B requires the licensee to consult with the WVSHPO before starting any unauthorized land-clearing or land-disturbing activities within the project boundaries, or in the event that previously unidentified archeological or historic properties were discovered during constructing or developing authorized project works or facilities.

#### I. Electro-magnetic Fields

The proposed relocated 9.9 mile, 69 Kv transmission line corridor (80-foot-wide right-of-way) traverses some residential lands. The closest residence is about 300 feet from the proposed transmission line.

10/ This revision rerouted the proposed transmission line for 2.25 miles across the Foulke Trust property. This is part of the 9.9 mile long transmission line being considered as the licensee's alternative.

Review of the available scientific literature indicates considerable uncertainty concerning whether and how exposure to electromagnetic fields (EMF) might adversely affect human health. The strongest evidence for adverse effects on human health associated with exposure to EMF came from several key epidemiological studies (i.e. Savitz et al. 1988; EPA 1990; London et al. 1991; London et al. 1992; INSERM 1993; and Maryland Department of Natural Resources 1994). In general, these studies showed a statistical association between a surrogate measure of exposure known as "wiring configuration code" and the increased risk of cancer. The wiring configuration code is based on the distance the residence is from the overhead transmission line and the type and physical arrangement of overhead transmission line. Using these parameters, the Commission staff finds the proposed 69 Kv transmission line, located about 300 feet from the nearest residence, would not increase the resident's risk of cancer.

The Commission staff reviewed other Commission licenses regarding transmission lines and EMF. On March 15, 1996, the Commission issued a Final Environmental Assessment and final order concerning a relocated 138 Kv transmission line for the Greenup Project, located in Greenup County, Kentucky and Scioto County, Ohio. <sup>11/</sup> The relocated transmission line is about 310 feet from a house under construction. In the Final EA, Commission staff examined the impacts of the EMF on the residence. The information and findings of this analysis are applicable to the proposed relocated 9.9 mile transmission line.

In the Greenup Project's case regarding the 138 Kv transmission line, Commission staff compared the EMF strengths measured for this line with the EMF strengths allowed by the state standards and found that the exposure levels of the Greenup Project transmission line were considerably lower than state standards. <sup>12/</sup> Given that the proposed Summersville transmission line is only 69 Kv and would employ similar designs, it appears that the proposed line would also produce exposure levels lower than the state standards.

The Commission also compared the EMF strengths typically produced by household appliances and wiring with the measured EMF strengths of the Greenup Project's 138 Kv transmission line at

<sup>11/</sup> 74 FERC ¶ 61,293 (1996)

<sup>12/</sup> State standards have been developed by eight states for EMF strengths at the edge of transmission line rights-of-way for lines of 230 to 500 Kv. Given that the state standards are not based on the results of any analytical studies, caution must be exercised in attempting to draw any conclusions regarding the relative safety of exposure to EMF based on a comparison of measured fields with state standards.

the subject house 310 feet from the transmission line. The Commission found that the level of exposure at the house is equivalent to the level of exposure most people experience from normal house wiring and electrical appliances. Given the 300-foot distance of the proposed 69 Kv transmission line from the nearest residence at the Summersville Project, the level of exposure at the residence is also expected to be no more than the level of exposure most people experience from normal house wiring and electrical appliances.

The findings of the available scientific literature and the comparison of the Greenup Project's transmission line and the proposed transmission line indicate EMF associated with this proposed transmission line should not adversely affect the health of residents in the area.

## 2. Action Alternative

This section analyzes the impacts of the 11.2 mile long alternate transmission line route identified by the Association.

### A. Geology and Soils

The impacts to geology and soils would be similar to the licensee's proposal. Because the Association's transmission line route crosses the NPS boundary at the Meadow River/Highway 19 Bridge, it is likely that the transmission line may have to be buried to address the visual impacts to federally protected park property. <sup>13/</sup> Given the additional 1.3 miles of this alternative and the possible need to bury a portion of this route, there would be more ground disturbance and hence greater impacts to soils along the approaches to the bridge and the additional 1.3-mile length. While this route may result in additional ground disturbance, the licensee will be required to implement a Sediment and Erosion Control Plan during construction and operation to minimize turbidity, control erosion and dust, stabilize slopes, and avoid sediments and water pollutants. This plan would keep impacts to a minimum.

### B. Water Resources

The Association's alternative would not adversely impact current water quality because the proposed line would span the river and stream crossings. As a result, impacts would be similar to those in the licensee's proposed amendment.

<sup>13/</sup> The amount of line which needs to be buried would depend on many factors including safety, West Virginia Department of Transportation standards, and requirements of the NPS. This amount has not been determined.

### C. Fisheries

The Association's alternative would have the same impact on fisheries as the licensee's proposed amendment. The transmission line would span the river and stream crossings which would result in no impacts to fisheries.

### D. Terrestrial Resources

Within the Association's proposed transmission line right-of-way, approximately 77 acres of forest <sup>14/</sup> would need to be cleared of trees for the proposed transmission line. This amount of clearing is minor compared to the extensive forest cover in the vicinity of the project. To mitigate the impacts from clearing, the licensee is required by the Transmission Line Management Plan to plant mast-bearing trees along the line and use only mechanical clearing (rather than herbicides) during construction and maintenance. These measures would adequately mitigate any adverse impacts to wildlife habitat in the area resulting from a loss of habitat or displacement during construction activity. New habitat and food sources would be created by the clearing and plantings.

As with the licensee's proposal, given the extensive amount of forest cover in the two-county project area, the overall impact on wildlife would be minimal. Further, some species would benefit by more diversified habitat associated with the opening of the forest.

The proposed transmission line would span the wetlands in order to avoid the placement of poles in wetland habitat. As a result, transmission line construction and operation should have no adverse effect on the wetlands it crosses.

### E. Threatened and Endangered Species

According to WVDNR (letter from J.W. Rawson, Wildlife Resources Section, WVDNR, June 13, 1995) and FWS (letter from W.A. Tolin, FWS, August 31, 1995), the licensed transmission line corridor was in the vicinity of the federally listed threatened plant species, Virginia spiraea, below the dam on the Gauley River and downstream of the reach of the Meadow River.

While no studies of the Association's proposed transmission line route in the area which deviates from the licensee's proposed route (4.1 miles) have been conducted, it is unlikely

<sup>14/</sup> This acreage is calculated by using 8 miles of transmission line with an 80-foot right-of-way. Approximately 3 miles of the transmission line will parallel Highway 19 and will require only minor clearing.

there would be any new impacts to the Virginia spiraea. This species grows in disturbed habitats along the scoured banks of high gradient streams and in several areas in the vicinity of the proposed transmission corridors along the Gauley River and the Gorge. The Association's proposed route crosses the Meadow River under the Highway 19 Bridge. Given the disturbed area, it is unlikely there would be populations of Virginia spiraea in the area. The licensee would be responsible for conducting studies of the additional area prior to construction of the transmission line to locate any populations. If any are located, the licensee would be required to avoid any populations of Virginia spiraea found in the area.

### F. Land Use and Recreation

Neither the licensee's proposed transmission line nor the Association's alternative would have an impact on planned recreational use of the project. At the project powerhouse where the transmission line would begin and span the Gauley River, recreationists would have a view of the line as it crosses the face of the dam. The licensee will construct the whitewater put-in and kayak access trail downstream of the dam and would plant trees and shrubbery to minimize the visual impacts.

The right-of-way for the Association's transmission corridor would traverse 4.0 acres of federal property (COE) and approximately 104 acres of private property. The Association's proposed route would parallel Highway 19 for approximately 3 miles and would cross the Meadow River under the Highway 19 bridge. This area is within the GRNRA boundary and, pursuant to the MOU contained in article 410 of the license, would need to be approved by the NPS in order to mitigate impacts to the federally protected area.

The Association's proposed transmission line would be under the Highway 19 Bridge. Depending on the manner in which this crossing is constructed, i.e. in a plastic or metal casing, this transmission line would be minimally visible to recreationists in the Gorge.

Clearing and construction of the transmission line corridor will preclude certain uses such as forestry or construction of buildings. To minimize the impact, the licensee has agreed to reduce the width of the transmission line through private property by using single poles on its proposed line. The same conditions would apply to the Association's proposed route. The licensee further states that the land under the transmission line may be used for pasture or wildlife habitat.

Regarding impacts to the Foulke Property, the licensee's transmission line route was shifted to follow an existing railroad right-of-way on the property for approximately 2.25

miles to minimize land-use conflicts, i.e. segmenting the forest lands. The Association's proposed route would cross the Foulke Property for approximately 2.6 miles in a location that would segment the forested area used for logging operations.

#### G. Aesthetics

During construction, boaters would also have views of the transmission line construction staging area. People travelling along Highway 19 would also have views of the transmission line construction. These views would be temporary because the sites will be restored and revegetated following completion of construction.

At the project powerhouse where the transmission line would begin and span the Gauley River, recreationists would have a view of the line as it crosses the face of the dam. The licensee will construct the whitewater put-in and kayak access trail downstream of the dam and would plant trees and shrubbery to minimize the visual impacts.

The Association's proposed transmission line route would follow an existing right-of-way (Highway 19) for approximately 3 miles. It would cross the Meadow River under the existing Highway 19 bridge and would be less visible to recreationists in the Gorge than the licensee's proposed transmission line route. Depending on the manner in which this crossing is constructed, i.e. in a plastic or metal casing, the transmission line route would be minimally visible to recreationists in the Gorge.

Because the transmission line would parallel Highway 19 for an additional 1.5 miles, it would be more visible to people travelling along this road; however, given the highway represents a dominant visual element, the addition of the transmission line would not significantly alter the view.

The remaining 8.2 miles of the route would be through existing forested areas. Given that the area is heavily forested with second growth timber, the linear clearing of the transmission line would be noticeable, but the overall visual impact would be minor. The use of 50-foot-tall wooden poles and the narrowing of the corridor through sensitive areas should minimize the impact, to the extent possible, of the cleared transmission line. The construction of the transmission line is not inconsistent with the existing uses in the area such as the railroad, highways, and access roads for mining operations. Regardless of the approved route, the licensee proposes to place single poles on private property to reduce visual impacts.

#### H. Cultural Resources

Review of the National Register of Historic Places 1966-1994 indicates that there are no historic properties in either Fayette or Nicholas Counties in the vicinity of the project listed on the National Register which would be impacted by the construction of the transmission line. However, no surveys have been conducted of the 4.1 miles of the Association's proposal which deviates from the licensee's proposal. Of this area, 1.5 miles of the transmission line will parallel Highway 19 in this proposal. The remaining 2.6 miles would cross Foulke Property which is used for logging and has been disturbed through the construction of logging roads and logging operation. Because this area has been disturbed by construction of the highway and logging, it is unlikely there will be any additional impacts to historic properties in the area.

To address cultural resources issues, license article 408 requires the licensee to consult with the WVSHPO before starting any unauthorized land-clearing or land-disturbing activities within the project boundaries, or in the event that previously unidentified archeological or historic properties were discovered during constructing or developing authorized project works or facilities.

#### I. Electro-magnetic Fields

The Association's proposed relocated 11.2 mile, 69 Kv transmission line corridor (80-foot-wide right-of-way) traverses some residential lands. Based on review of the Association's map filed on September 24, 1996, there are no residences within 200 feet of the proposed line. As a result, impacts from EMF associated with this proposed transmission line would be similar to those in the licensee's proposed line and should not adversely affect the health of residents in the area.

#### 3. No-action Alternative

Under the no-action alternative, the amendment would be denied and the project would be constructed and operated under the terms and conditions of the original license. The proposed project was determined economically infeasible by the licensee. Therefore, the licensee is not likely to construct the facility.

The environmental impacts of the licensed project are described in the EA issued in January 1992. A comparison of the impact of the licensed, the licensee's proposed amended, and the

Association's proposed amended project is provided in Section G below. <sup>15/</sup>

**G. COMPARISON OF LICENSED PROJECT AND PROPOSED ALTERNATIVES**

**1. Construction of New Powerhouse**

**A. Geology and Soils**

The amount of excavation required for construction of the amended project would be less than that anticipated for the licensed project. The amended project would require only one cofferdam for construction of the powerhouse rather than the three-stage cofferdam planned for the licensed project.

**B. Water Resources**

As discussed in Section F. above, under the amended project, DO levels would be closer to saturation and higher than 7 mg/l more often than under the licensed condition. This would have a slightly beneficial effect on overall water quality. The greater oxygenation from passage through the Howell-Bunger valves would aid in meeting the 7 mg/l required by the Water Quality Certificate and by article 404 for the downstream reach of the Gauley River.

**C. Fisheries**

As discussed in the Fisheries Section F.1.C, some aspects of the proposed project will increase fish passage mortality compared to the licensed project while others will decrease it. Both the licensed project and the proposed amended project would decrease fish passage mortality compared to the existing situation where no fish survive passage through the Howell-Bunger valves.

**D. Terrestrial Resources**

No additional vegetation and wildlife impacts would occur as a result of the proposed changes in the location of the powerhouse. The area was previously disturbed by the construction of the COE dam.

<sup>15/</sup> Because the Association's proposed amendment concerns only the transmission line route, it will be discussed under the comparison of transmission line routes.

**E. Threatened and Endangered Species**

Neither the construction of the licensed powerhouse nor the proposed amended powerhouse would impact threatened or endangered species.

**F. Land Use and Recreation**

As with the licensed project, the amended project would displace an existing whitewater boating access; however, the licensee will replace the existing whitewater rafting put-in and improve the existing kayak put-in before beginning project construction.

In addition, there should be less disturbance of bank fishing and boating activities during construction than would have occurred for the licensed project because there would be a smaller construction area.

**G. Aesthetics**

The proposed powerhouse would adversely affect aesthetic resources within the project boundary; however, the impact would be considerably less than would have occurred under the licensed project. The licensed powerhouse would be more of a visual impact on the surrounding area because of its larger size and location in the middle of the Gauley River. The less visible amended powerhouse location represents an improvement over the more prominent and highly visible location proposed for the licensed project.

The relocation and reduction in the number of penstocks, from three in the licensed project to one in the amended design, also represents an aesthetic improvement over the licensed design.

**H. Cultural Resources**

There are no known archeological sites within the COE boundaries that would be affected by the proposed project. As a result, neither the licensed nor proposed amended powerhouse would impact historic properties.

**2. Construction of Transmission Line**

**A. Geology and Soils**

The impacts from construction of the licensee's proposed new transmission line and the Association's proposed new line would be similar to those from the licensed transmission line. As a result, the types of impact on geology and soils, principally

erosion and sedimentation, would be similar to those expected for the licensed transmission line. Given both proposed routes are longer than the licensed route, there would be more ground disturbance for the proposed routes. Also, additional ground disturbance would be expected where the Association's route crosses beneath the Highway 19 bridge.

Overall, the licensed transmission line would be marginally environmentally preferable. Given the Association's proposed route is the longest of the three and may need to be buried at the approaches to the Highway 19 Bridge, the licensee's proposed route would be the next best alternative regarding impacts to geology and soils.

#### B. Water Resources

As discussed in sections 1B. and 2B. above, none of the three routes, the licensed or the two proposed routes, would adversely impact current water quality and therefore none is environmentally preferable.

#### C. Fisheries

As discussed in the Fisheries sections above (1C. and 2C.), neither of the three transmission line routes would adversely affect fisheries resources during construction or operation. As a result, none of the routes is environmentally preferable.

#### D. Terrestrial Resources

The licensed 8-mile transmission line right-of-way extended northwest from the powerhouse and would have required approximately 30 acres would be cleared for the transmission line right-of-way, as opposed to 75 acres for the licensee's proposed transmission line corridor and approximately 77 acres for the Association's proposed route. All three routes would span the wetlands in order to avoid the placement of poles in wetland habitat.

Given that the type of impacts for the three routes are essentially the same, the licensed route would be marginally environmentally preferable because it is shorter and would involve less clearing of forested areas. The licensee's proposed route would be the next best alternative because of its length.

#### E. Threatened and Endangered Species

Impacts to threatened and endangered species would be similar in the licensed and both proposed amended transmission line. In all cases, the licensee plans to avoid the federally listed threatened plant species, Virginia spiraea, known to exist below the dam on the Gauley River and downstream of the reach of

the Meadow River. As a result, neither the licensed route nor either of the proposed revisions is environmentally preferable over the other.

#### F. Land Use and Recreation

The Summersville license requires the licensee to mitigate impacts to recreation prior to construction of the project facilities to avoid impacts to boaters on the Gauley River. This mitigation includes planting of trees and shrubbery to minimize the visual impacts on recreationists of the transmission line crossing the face of the dam.

Construction of the transmission line routes would not preclude any recreational uses of the area; however, the licensee's proposed transmission line would be visible to boaters, hikers and other recreationists in the Gorge. The Association's route minimizes impacts to recreationists using the Meadow River by crossing under the Highway 19 Bridge.

The licensed route and licensee's proposed route are outside the GRNRA boundaries. The Association's alternative crosses the GRNRA at the Highway 19 Bridge.

The licensed route would impact use of the forest land less than either the licensee's amendment proposal or the Association's alternative, both of which primarily cross forest. While neither the licensee's proposal nor the Association's alternative would significantly conflict with forest practices, the licensed route is marginally preferable because it will be shorter and involve less clearing.

#### G. Aesthetics

The licensed, the licensee's proposed, and the Association's alternative transmission lines would adversely affect aesthetic resources within the project area.

The licensed route would have the least impact because it is shorter and stays within the COE property boundaries for nearly its entire length. The majority of the COE property through which the licensed line would pass is not an area heavily used by recreationists and does not contain a lot of residential property. As a result, the transmission line in this section would avoid areas where it would be visible to most residents and recreationists.

The overall aesthetic impacts of the licensee's proposal and the Association's alternative are similar. The Association's alternative avoids crossing the Meadow River using a new right-of-way as the licensee's does, but is longer. In addition, more of the Association's alternative would be constructed more along



Highway 19, including the approaches to the bridge across the Meadow River, which is within the GRNRA. As a result, the Association's alternative may be visible to more people than the crossing proposed by the licensee; however, given that the highway is the dominant feature in the area, this is not a significant impact.

The licensee's route will be visible to recreationists in the Gorge. Based on a review of the available maps, there are no other existing right-of-ways (i.e. transmission lines or pipeline corridors) crossing the subject area of the Gorge. As a result, the licensee's proposed line will introduce a man-made intrusion in the area. Approximately 1/2 mile of the transmission line corridor will be visible to boaters and fishermen along the northern slope of the Gorge. Boaters will have a view of this corridor only for a brief period as they raft beneath the transmission line. Hikers and fishermen will have a view of the transmission line only along the right-of-way, as this transmission line will not protrude above the existing vegetation. Given that a maximum of 80 feet of the shoreline (out of approximately 5.0 miles of the subject area of the Gorge from Highway 19 to Highway 41) will be cleared for the right-of-way, the overall landscape character of the Gorge will not be significantly impacted.

#### H. Cultural Resources

Neither the licensed transmission line, the licensee's proposed amendment, nor the Association's alternative impact historic properties. As a result, none of the three routes is environmentally preferable.

#### 3. Economic Comparison

Under the current license, the project's total cost estimate was about \$60,680,000 (1991 \$). The project's annual generation estimate was about 198.0 Gigawatt hours (GWh). Under the proposed amendment, the reconfigured project would cost about \$35,854,000 (1995 \$) and would generate about 205.0 Gwh of energy annually. The reduction in cost estimate is due to the major reduction in the size of the powerhouse and its associated civil works, and the number of turbines and generators from four to two. The licensee states that this reduction in project cost would make the project economically feasible under current low power market values.

The licensee's preliminary cost estimate for the proposed transmission line in the amendment is about \$200,000 to \$250,000 per mile. This amount includes the cost of the conductors, insulators, supporting poles, and right-of-way easements. The transmission line route proposed by the licensee is about 9.9 miles long. An alternative route proposed by the Mt. Nebo/Mt.

Lookout Association would extend the transmission line length by about 1.3 miles. This alternative route would increase the total cost of the line by about \$260,000 to \$325,000.

Furthermore, because the licensee may need to cross under the Highway 19 Bridge and bury a portion of the Association's proposed transmission line route to avoid impacts to the GRNRA, costs for this route would increase.

#### G. ISSUES AND RECOMMENDATIONS

##### 1. Transmission Line Plan

Article 406 of the original license requires the licensee to design and construct the transmission line in accordance with guidelines set forth in "Suggested Practices for Raptor Protection on Power Lines -- the State of the Art in 1981," by the Raptor Research Foundation, Inc. The licensee developed a Transmission Line Design Plan, including raptor protection, which was approved by the Commission and federal and state agencies (letter to James B. Price, Noah Corp., from FERC, August 9, 1994). This plan was designed for the proposed double poles with an H-type structure using wooden poles with a crossbar and tension braces of wood or metal. Because the licensee is proposing to revise its pole design to single poles on private property or other areas where feasible, the Commission staff recommends the licensee file, for Commission approval, a transmission line design plan, including raptor protection, for the single poles.

##### 2. Virginia Spiraea Avoidance Plan

Both proposed transmission line corridors are in the vicinity of a federally listed threatened plant species, Virginia spiraea, below the dam on the Gauley River and downstream on the reach of the Meadow River.

The licensee developed an avoidance plan that FWS approved in a letter dated August 11, 1995. This plan states the licensee will contact the FWS prior to construction activity to confirm the location and mark the populations of Virginia spiraea. The line will be placed as far from the populations as practical. The proposed route would cross the gorge in only one place, which does not contain the threatened plant. To ensure that the Virginia spiraea would not be impacted by the construction and maintenance of the powerline, the Commission staff recommends the licensee implement its avoidance plan in the construction of the licensed, the licensee's, or the Association's proposed transmission line.

## H. CONCLUSION

Based on information provided by resource agencies, the licensee, and the Association, we conclude that approval of either the licensee's amendment proposal, or its amendment proposal as modified by the Association's alternative, would not significantly impact the environment.

The proposed redesign and relocation of the project powerhouse would decrease the overall impacts of construction at the dam by reducing the size of the facility and siting it on the shore instead of in the middle of the river.

The impacts of the licensed, the licensee's proposed transmission line route and the Association's are similar. However, since the licensed route is not economically feasible, we will base our conclusion on a review of the licensee's and the Association's proposed routes.

In general, both would have minor adverse impacts on soils, vegetation, wildlife, land use and aesthetics and no impacts on human health, water quality, fisheries, and cultural resources. Our review of the routes did not identify any resources that would be significantly impacted. Since the environments and kinds of impacts associated with the two routes are so similar, we believe that the preferred route is the shorter of the two, or the licensee's proposal. By constructing the licensee's proposed route, short-term and long-term impacts of the project's transmission line would be reduced by approximately 12 percent. Further, the shorter route would be less costly to construct.

In addition, the licensee's proposal to develop additional recreational facilities and to implement the sediment and erosion control plan, transmission line management plan, and transmission line design plan will adequately mitigate any impacts. In addition, we are recommending the licensee file a transmission line design plan for the single poles and implement its plan to avoid any populations of Virginia spiraea during construction of the transmission line. We, therefore, recommend that the licensee for the Summersville Hydroelectric Project be amended with the Commission staff's additional requirements, and conclude that approval of the proposed amendment would not constitute a major federal action significantly affecting the quality of the human environment.

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**I. LIST OF PREPARERS**

H. Campbell - FERC Task Monitor .

B. Mohrman - Stone & Webster, Deputy Project Manager (M.A. Urban Affairs - 19 years experience)

S. Conant - Stone & Webster, Recreation Planning (M.A. Urban and Environmental Policy - 12 years experience)

J. Downing - Stone & Webster, Aquatic Ecologist/Fisheries Biologist (M.S. Biometrics - 19 years experience)

R. Fosco - Stone & Webster, Civil Engineering (B.S. Mechanical Engineering - 25 years experience)

E. Kurkoski - Stone & Webster, Civil Engineering (B.S. Civil Engineering - 24 years experience)

P. Martin - Stone & Webster, Wildlife & Ecology (M.S. Zoology, 10 years experience)