Low Impact Hydropower Institute

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LOW IMPACT HYDROPOWER QUESTIONNAIRE

Alcoa Power Generating Inc.
Tapoco Hydroelectric Project (FERC No. 2169)

[Excerpted from Part VI, Section E of the Low Impact Hydropower Certification Program. Words in italics are defined in Part VI, Section C, and line-by-line instructions are available in Section D of the program, available on-line in PDF format at http://www.lowimpacthydro.org.]

E. LOW IMPACT HYDROPOWER QUESTIONNAIRE

Background Information	
1) Name of the *Facility.*	Alcoa Power Generating Inc. Tapoco Hydroelectric Project (FERC No. 2169)
2) Applicant's name, contact information and relationship to the Facility. If the Applicant is not the Facility owner/operator, also provide the name and contact information for the Facility owner and operator.	Robert Smet Environmental and Natural Resources Manager Alcoa Power Generating Inc. – Hydro Division PO Box 576 Badin, North Carolina 28009 704-422-5644 phone 704-422-5776 fax robert.smet@alcoa.com
3) Location of Facility by river and state.	Little Tennessee and Cheoah Rivers North Carolina and Tennessee
4) Installed capacity.	347 MW
5) Average annual generation.	The average annual (gross) generation of the Project over the last 20 years

	(1982 – 2001) has been approximately 1,445,582,200 kWh).
6) Regulatory status.	FERC Project No. 2169 – Recently relicensed for a 40-year term by FERC Order dated January 25, 2005
7) Reservoir volume and surface area measured at the high water mark in an average water year.	Gross storage capacity: Santeetlah Reservoir = 158,000 ac-ft Cheoah Reservoir = 35,000 ac-ft Calderwood Reservoir = 41,000 ac-ft Chilhowee Reservoir = 49,000 ac-ft Total = 283,000 ac-ft
8) Area occupied by non-reservoir facilities (*e.g.,* dam, penstocks, powerhouse).	The area occupied by non-reservoir facilities is: Santeetlah Development = 10.5 acres (dam and powerhouse are 6.5 acres and 4.0 acres respectively) Santeetlah Pipeline = 4.5 acres (above ground sections only) Cheoah Development = 5.9 acres (dam, powerhouse, penstock) Calderwood Development = 10.2 acres (above ground sections only, dam and powerhouse are 9.3 acres and 0.9 acres, respectively) Chilhowee Development = 6.1 acres (dam and powerhouse) Total = 37.2 acres
9) Number of acres inundated by the Facility.	Reservoir surface area at full pool elevation: Santeetlah Reservoir = 2,881 acres Cheoah Reservoir = 644 acres Calderwood Reservoir = 570 acres Chilhowee Reservoirs = 1,734 acres Total = 5,829 acres
10) Number of acres contained in a 200-foot zone extending around entire impoundment.	Area includes APGI and non-APGI lands and excludes the Cheoah River: Santeetlah Reservoir = 1,756 acres Cheoah reservoir = 505 acres Calderwood Reservoir = 412 acres Chilhowee Reservoir = 631 acres Total = 3,304 acres
11) Please attach a list of contacts in the relevant Resource Agencies and in non-governmental organizations that have been involved in recommending conditions for your Facility.	Please see Attachment 1.
12) Please attach a description of the Facility, its mode of operation (*i.e.,* peaking/run of river) and a map of the Facility.	Please see Attachment 2.

Questions for "New" Facilities Only: If the Facility you are applying for is "new" i.e., an existing dam that added or increased power generation capacity after August of 1998 please answer the following questions to determine eligibility for the program.	New = Increased Power Generation Capacity
13) When was the dam associated with the Facility completed?	Cheoah April 1919 Units 1-4 April 1949 Unit 5 Santeetlah June 1928 Calderwood April 1930 Chilhowee August 1957
14) When did the added or increased generation first generate electricity? If the added or increased generation is not yet operational, please answer question 18 as well.	Calderwood Unit 3 Upgrade Operational July 2002
15) Did the added or increased power generation capacity require or include any new dam or other diversion structure?	No
16) Did the added or increased capacity include or require a change in water flow through the facility that worsened conditions for fish, wildlife, or water quality, (for example, did operations change from run-of-river to peaking)?	No
17 (a) Was the existing dam recommended for removal or decommissioning by resource agencies, or recommended for removal or decommissioning by a broad representation of interested persons and organizations in the local and/or regional community prior to the added or increased capacity? (b) If you answered "yes" to question 17(a), the Facility is not eligible for certification, unless you can show that the added or increased capacity resulted in specific measures to improve fish, wildlife, or water quality protection at the existing dam. If such measures were a result, please explain.	No

18 (a) If the increased or added generation is not yet operational, has the increased or added generation received regulatory authorization (e.g., approval by the Federal Energy Regulatory Commission)? If not, the facility is not eligible for consideration; and (b) Are there any pending appeals or litigation regarding that authorization? If so, the facility is not eligible for consideration.	Yes. Tapoco's original FERC license totaled 326 MW and was subsequently expanded to 359.8 MW with the anticipated increase in capacity at Calderwood. APGI intends to upgrade the turbines and generators at all four project developments as outlined in Attachment 3. These modifications are planned over the next 15 years and will likely result in a net increase of total capacity to at least 380.1 MW. APGI will continue to operate the four developments as daily peaking facilities. The modifications will decrease installed capacity at Santeetlah from 49.2 to 47 MW, increase installed capacity at the Cheoah development from 118 to 144.7 MW, and decrease capacity at the Chilhowee development from 52.2 to 48 MW. The Calderwood upgrades were started before the new FERC license application was submitted and were included in the previous license which had been expanded to 359.8 MW. • Calderwood Unit 3 was upgraded from 39 MW to 50 MW in July 2002. • Calderwood Unit 2 is being upgraded from 39 MW to 50 MW; expected completion in August 2005. • Calderwood Unit 1 will be upgraded from 39 MW to 50 MW; expected completion in May 2006 (b) No	
A. Flows	**PASS**	**FAIL**
1) Is the Facility in *Compliance* with *Resource Agency Recommendations* issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations) for both the reach below the tailrace and all bypassed reaches?	**YES = Pass, Go to B**	
2) If there is no flow condition recommended by any Resource Agency for the Facility, or if the		

recommendation was issued prior to January 1, 1987, is the Facility in Compliance with a flow release schedule, both below the tailrace and in all bypassed reaches, that at a minimum meets Aquatic Base Flow standards or "good" habitat flow standards calculated using the Montana-Tennant method?		
3) If the Facility is unable to meet the flow standards in A.2., has the Applicant demonstrated, and obtained a letter from the relevant Resource Agency confirming that demonstration, that the flow conditions at the Facility are appropriately protective of fish, wildlife, and water quality?		
B. Water Quality	**PASS**	**FAIL**
1) Is the Facility either: a) In Compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the Facility after December 31, 1986? Or b) In Compliance with the quantitative water quality standards established by the state that support designated uses pursuant to the federal Clean Water Act in the Facility area and in the downstream reach?	**YES = Go to B2**	
2) Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water	**YES = Go to B3**	

Act?		
3) If the answer to question B.2 is yes, has there been a determination that the Facility is not a cause of that violation?	**YES = Pass**	
C. Fish Passage and Protection	**PASS**	**FAIL**
1) Is the Facility in Compliance with *Mandatory Fish Passage Prescriptions* for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986?	**YES = Go to C5**	
2) Are there historic records of anadromous and/or catadromous fish movement through the Facility area, but anadromous and/or catadromous fish do not presently move through the Facility area (*e.g.,* because passage is blocked at a downstream dam or the fish run is extinct)? a) If the fish are extinct or extirpated from the Facility area or downstream reach, has the Applicant demonstrated that the extinction or extirpation was not due in whole or part to the Facility? b) If a Resource Agency Recommended adoption of upstream and/or downstream fish passage measures at a specific future date, or when a triggering event occurs (such as completion of passage through a downstream obstruction or the completion of a specified process), has the Facility owner/operator made a legally enforceable commitment to provide such passage?		

3) If, since December 31, 1986: a) Resource Agencies have had the opportunity to issue, and considered issuing, a Mandatory Fish Passage Prescription for upstream and/or downstream passage of anadromous or catadromous fish (including delayed installation as described in C2a above), and b) The Resource Agencies declined to issue a Mandatory Fish Passage Prescription, c) Was a reason for the Resource Agencies' declining to issue a Mandatory Fish Passage Prescription one of the following: (1) the technological infeasibility of passage, (2) the absence of habitat upstream of the Facility due at least in part to inundation by the Facility impoundment, or (3) the anadromous or catadromous fish are no longer present in the Facility area and/or downstream reach due in whole or part to the presence of the Facility?		
4) If C3 was not applicable: a) Are upstream and downstream fish passage survival rates for anadromous and catadromous fish at the dam each documented at greater than 95% over 80% of the run using a generally accepted monitoring methodology? Or b) If the Facility is unable to meet the fish passage standards in 4.a., has the Applicant demonstrated, and obtained a letter from the		

US Fish and Wildlife Service or National Marine Fisheries Service confirming that demonstration, that the upstream and downstream fish passage measures (if any) at the Facility are appropriately protective of the fishery resource?		
5) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and/or downstream passage of *Riverine* fish?	**YES = Go to C6**	
6) Is the Facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?	**YES = Pass, go to D**	
D. Watershed Protection	**PASS**	**FAIL**
1) Is there a buffer zone dedicated for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low-impact recreation) extending 200 feet from the high water mark in an average water year around 50 - 100% of the impoundment, and for all of the undeveloped shoreline	**YES = Pass, go to E and receive 3 extra years of certification**	
2) Has the facility owner/operator established an approved watershed enhancement fund that: 1) could achieve within the project's watershed the ecological and recreational equivalent of land protection in D.1.,and 2) has the agreement of appropriate stakeholders and state and federal resource agencies?	**YES = Pass, go to E and receive 3 extra years of certification**	
3) Has the facility owner/operator established	**YES = Pass, go to E**	

through a settlement agreement with appropriate stakeholders and that has state and federal resource agencies agreement an appropriate shoreland buffer or equivalent watershed land protection plan for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low impact recreation)		
4) Is the facility in compliance with both state and federal resource agencies recommendations in a license approved shoreland management plan regarding protection, mitigation or enhancement of shorelands surrounding the project.	**YES = Pass, go to E**	
E. Threatened and Endangered Species Protection	**PASS**	**FAIL**
1) Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?	**YES = Go to E2**	
2) If a recovery plan has been adopted for the threatened or endangered species pursuant to Section 4(f) of the Endangered Species Act or similar state provision, is the Facility in Compliance with all recommendations in the plan relevant to the Facility?	**YES = Go to E3**	
3) If the Facility has received authority to incidentally *Take* a listed species through: (i) Having a relevant agency complete consultation pursuant to ESA Section 7 resulting in a biological opinion, a habitat	**N/A = Go to E5**	

recovery plan, and/or (if needed) an incidental Take statement; (ii) Obtaining an incidental Take permit pursuant to ESA Section 10; or (iii) For species listed by a state and not by the federal government, obtaining authority pursuant to similar state procedures; is the Facility in Compliance with conditions pursuant to that authority?		
4) If a biological opinion applicable to the Facility for the threatened or endangered species has been issued, can the Applicant demonstrate that: a) The biological opinion was accompanied by a FERC license or exemption or a habitat conservation plan? Or b) The biological opinion was issued pursuant to or consistent with a recovery plan for the endangered or threatened species? Or c) There is no recovery plan for the threatened or endangered species under active development by the relevant Resource Agency? Or d) The recovery plan under active development will have no material effect on the Facility's operations?		
5) If E.2. and E.3. are not applicable, has the Applicant demonstrated that the Facility and Facility operations do not negatively affect listed species?	**YES = Pass, go to F**	

F. Cultural Resource Protection	PASS	FAIL
1) If FERC-regulated, is the Facility in Compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license or exemption?	**YES = Pass, go to G**	
2) If not FERC-regulated, does the Facility owner/operator have in place (and is in Compliance with) a plan for the protection, mitigation or enhancement of impacts to Cultural Resources approved by the relevant state or federal agency or *Native American Tribe*, or a letter from a senior officer of the relevant agency or Tribe that no plan is needed because Cultural Resources are not negatively affected by the Facility?		
G. Recreation	**PASS**	**FAIL**
1) If FERC-regulated, is the Facility in Compliance with the recreational access, accommodation (including recreational flow releases) and facilities conditions in its FERC license or exemption?	**YES = Go to G3**	
2) If not FERC-regulated, does the Facility provide recreational access, accommodation (including recreational flow releases) and facilities, as Recommended by Resource Agencies or other agencies responsible for recreation?		
3) Does the Facility allow access to the reservoir and downstream reaches without fees or charges?	**YES = Pass, go to H**	

H. Facilities Recommended for Removal	**PASS**	**FAIL**
1) Is there a Resource Agency Recommendation for removal of the dam associated with the Facility?	**NO = Pass, Facility is Low Impact**	

Attachment 1 – Stakeholders

Please attach a list of contacts in the relevant Resources Agencies and in non-governmental organizations that have been involved in recommending conditions for your facility.

Agency/Organization	Name	Address	Phone	Fax	Email
Alcoa Power Generating Inc. (Tapoco Division)	Walter F. Brockway	300 North Hall Road Alcoa, TN 37701	865-977-3334	865-977-3843 (fax)	walter.brockway@alcoa.com
American Rivers	Andrew Fahlund	1205 Vermont Avenue NW Suite 720 Washington, D.C. 20005	202-347-7550		afahlund@americanrivers.org
Blount County	Beverley Woodruff	341 Court Street Maryville, TN 37804	865-273-5710	865-273-5705 (fax)	
City of Alcoa	Mark Johnson	223 Associates Boulevard Alcoa, TN 37701	865-380-4795	865-380-4797 (fax)	mjohnson@ci.alcoa.tn.us
City of Maryville	Gary Hensley	404 W. Broadway Avenue Maryville, TN 37801	865-981-1302	865-984-0318 (fax)	ghensley@ci.maryville.tn.us
Cross Creek Property Owners Association	David Meeker	P.O. Box 515 Robbinsville, NC 28771	828-479-9136	770-396-5200 (fax)	meekerda@aol.com
Department of Interior – Office of	Gregory Hogue	Richard B. Russell Federal Building	404-331-4524		gregory_hogue@ios.doi.gov

Environmental Policy and Compliance		75 Spring Street, SW Atlanta, GA 30303			
Eastern Band of Cherokee Indians	Chief	88 Council House Loop P.O. Box 455 Cherokee, North Carolina 28719	828-497-7002		
Eastern Band of Cherokee Indians	Tribal Historic Preservation Office	810 Acquoni Road P.O. Box 455 Cherokee, North Carolina 28719	828-488-0237		
Friends of Lake Santeetlah	Richard D. Eyestone	770 Cherokee Trail Robbinsville, NC 28771	828-479-8477		eyestone@mindspring.com
Graham County	Dirk Cody	12 North Main Street Robbinsville, NC 28771	828-479-7961		hcody@gte.net
National Park Service	Jeff Duncan	175 Hamm Road, Suite C Chattanooga, TN 37405	423-266-1150	423-266-2558 (fax)	jeff_duncan@nps.gov
National Park Service Great Smoky Mountains National Park	Lawrence Hartmann	107 Park Headquarters Road Gatlinburg, TN 37738	865-436-1245	865-430-0341 (fax)	larry_hartmann@nps.gov
National Parks Conservation	Don Barger	706 Walnut Street #200	865-329-2424		dbarger@npca.org

Association		Knoxville, TN 37902			
NCDENR - Division of Parks and Recreation	Stephen Dwayne Stutzman	59 Woodfin Place Asheville, NC 28801	828-251-6208	828-251-6452 (fax)	dwayne.stutzman@ncmail.net
NCDENR - Division of Water Resources	Steve Reed	1611 Mail Service Center Raleigh, NC 27699-1611	919-715-5424	919-733-3558 (fax)	steven.reed@ncmail.net
NCDENR - Division of Water Quality	John Dorney	4401 Reedy Creek Road Raleigh, NC 27607	919-733-1786	919-733-9959 (fax)	john.dorney@ncmail.net
North Carolina Wildlife Resources Commission	Chris Goudreau	645 Fish Hatchery Road Marion, NC 28752	828-652-4360	828-652-3279 (fax)	chris.goudreau@ncwildlife.org
Tennessee Clean Water Network	Renee Victoria Hoyos	706 Walnut Street Knoxville, TN 37902	865-522-7007	865-329-2422 (fax)	renee@tcwn.org
Tennessee Department of Environment and Conservation	Daniel C. Eagar	7th Floor, L&C Annex 401 Church Street Nashville, TN 37243	615-532-0708		dan.eagar@state.tn.us
Tennessee Wildlife Resources Agency	Mark Fagg	3030 Wildlife Way Morristown, TN 37814	423-587-7037	423-587-7057 (fax)	mark.fagg@state.tn.us
The Nature Conservancy of Tennessee	Paul Trianosky	214 Stonebridge Lane Mountain City, TN 37683	423-727-1294		ptrianosky@tnc.org
Town of Robbinsville	Robert H. Moseley	P.O. Box 36	828-479-6441	828-479-6446 (fax)	info@cherokeerealty.com

		Robbinsville, NC 28771			
US Bureau of Indian Affairs	Jim Kardatzke Kurt Chandler	711 Stewarts Ferry Pike Nashville, TN 37217	615-467-1675	615-467-2939	
US Fish and Wildlife Service	Mark Cantrell	160 Zillicoa Street Asheville, NC 28801	828-258-3939	828-258-5330	mark_a_cantrell@fws.gov
US Forest Service	Forest Supervisor	160A Zillicoa Street Asheville, NC 28801			
US Forest Service – Cherokee National Forest	Forest Supervisor	PO Box 2010 Cleveland, TN 37320			
Western NC Alliance	Roger Turner	16 Stewart Street Franklin, NC 28734	828-524-3899		roger@wnca.org

Attachment 2 – Tapoco Project Location and Operations

Please attach a description of the facility, its mode of operation, and a map of the facility.

Hydropower Project Description

Project Boundary

The total area within the FERC Project Boundary is approximately 8,300 acres (5,800 acres of water and 2,500 acres of land). The new license is anticipated to add about 147 acres of land within the Project Boundary. The Tapoco Project extends along the Little Tennessee River from about river mile marker 33 located approximately 3,000 feet downstream of Chilhowee Dam to just above river mile marker 60, a little more than a half-mile downstream of the Tennessee Valley Authority's (TVA) Fontana Dam. Chilhowee, Calderwood and Cheoah developments and Santeetlah Powerhouse are located on the Little Tennessee River. Santeetlah Dam and Reservoir are located on the Cheoah River, a tributary to the Little Tennessee River. Santeetlah Dam is located approximately 9.3 miles upstream of the confluence of the two rivers, which is located just downstream of Cheoah Powerhouse. The Project Boundary also encompasses much of the Cheoah River corridor downstream of the Santeetlah Dam.

Santeetlah Development

Santeetlah Dam is located in Graham County, North Carolina on the Cheoah River, just upstream of river mile 9. Santeetlah Reservoir consists of 78.8 miles of shoreline and 2,881 acres of water surface at its full-pool elevation of 1,940.9 feet[1]. The drainage area of Santeetlah Reservoir covers 176 square miles.

The installed capacity of the Santeetlah Development is 49.2 MW. The Santeetlah Powerhouse contains two vertical Francis turbine units directly connected to generators.

Little Tennessee Mainstem Reservoirs

Cheoah Development

Cheoah Development is the most upstream of the three Project developments located on the Little Tennessee River. The dam is located in Graham and Swain counties, North Carolina, between river miles 51 and 52, just upstream of the mouth of the Cheoah River. Cheoah

[1] All elevations are based on the USGS datum. When the Tapoco Project was originally constructed, a local survey datum was used for each development. The full-pool reservoir elevations (USGS/local datum) are as follows: Santeetlah 1,940.9 ft / 1,817 ft, Cheoah 1,276.8 ft / 1,154 ft, Calderwood 1,087.8 ft / 965 ft and Chilhowee 874 ft / 874 ft. Regardless which datum is used, the full-pool reservoir elevation reflects the top of the spillway gate elevation or the maximum normal water level for that reservoir.

Reservoir has 19.6 miles of shoreline and 644 acres of water surface at full-pool (elevation 1,276.8 feet). Cheoah Reservoir has a drainage area of 1,608 square miles.

The installed capacity of the Cheoah Development is 118.0 MW. The Cheoah powerhouse contains five vertical Francis turbine units directly connected to generators.

Cheoah Development

Calderwood Development

Calderwood Development, the third in the chain of Project developments, is located in Graham and Swain counties, North Carolina, and Blount and Monroe counties, Tennessee between river miles 42 and 44 of the Little Tennessee River. Calderwood Reservoir consists of 16.9 miles of shoreline and 570 acres of water surface at full-pool (elevation 1,087.8 feet). The drainage area of Calderwood Reservoir is 1,856 square miles.

Calderwood Development currently has an installed capacity of approximately 128 MW and is undergoing upgrades that should increase its total capacity to 140 to 150 MW. The Calderwood Powerhouse contains three vertical Francis turbine units directly connected to generators.

Chilhowee Development

Chilhowee is the most downstream of the Project developments. The development is located in Blount and Monroe counties, Tennessee between river miles 33 and 34 of the Little Tennessee River. Chilhowee Reservoir consists of 26.4 miles of shoreline and 1,723 acres of water surface at full-pool (elevation 874.0 feet). The reservoir covers a drainage area of 1,977 square miles. The installed capacity of Chilhowee Development is 52.2 MW. The Chilhowee Powerhouse contains three Kaplan turbine units directly connected to generators.

Hydropower Project Operations

Santeetlah Reservoir, the largest of the four Project reservoirs, is operated as a storage impoundment in accordance with an annual operating curve, which establishes target seasonal reservoir levels. The current operating curve was adopted in 2004 as part of the Relicensing Settlement Agreement.

Santeetlah Reservoir is operated to maintain high recreational elevations during the summer months, followed by fall drawdown to allow for collection of rainfall and runoff during the late fall, winter and early spring. The current operating curve (Figure 1) was developed to also provide protection and enhancement for a variety of other resources and uses, including aquatic species and habitat, water quality, reservoir wetlands, archaeological sites, and scenic appearance throughout the year. During the period April 1 to November 1, the maximum drawdown at Santeetlah Reservoir is 5 feet. The reservoir is filled during the month of March at such a rate that by April 1 the maximum drawdown is 5 feet. During the period December 1 to March 1, the maximum drawdown is 10 feet. During the month of November, the reservoir is drawn down at such a rate that by December 1 the maximum drawdown is 10 feet.

Prior to the Relicensing Settlement Agreement, there were no regular flow releases from Santeetlah Dam into the Cheoah River. Water from Santeetlah Reservoir was diverted to the

powerhouse located on the Little Tennessee River upstream of Cheoah Dam. The drainage area for the Cheoah River below Santeetlah Dam was made up of leakage from the dam, tributary inflow and occasional spills from the dam.

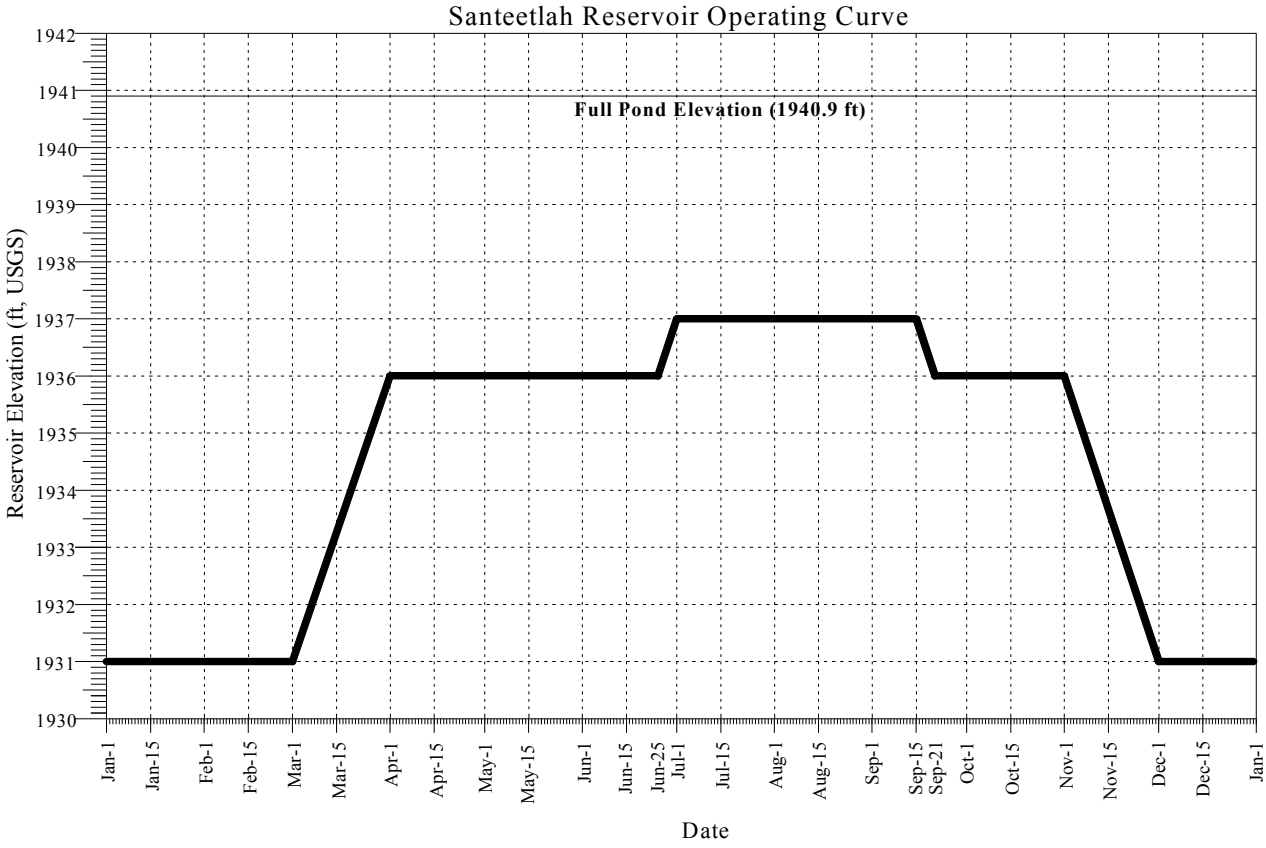
Beginning September 1, 2005 as part of the Relicensing Settlement Agreement, Tapoco will release flows from Santeetlah Dam into the Cheoah River according to Table 1. The aquatic base flow for each month is determined by calculating the average daily inflow (ADI) value for the three preceding months using daily measures of change in reservoir elevation and total discharge. If the ADI value is greater than the historic 25th percentile average flow for that month (Table 2), Tapoco releases flows according to Tier A of Table 1. If the ADI is less than or equal to the historic 25th percentile average flow for that month, flows are released according to Tier B of Table 1.

Since TVA's upstream Fontana Dam serves as the primary storage and flow control facility for the lower Little Tennessee River, operations of the Cheoah, Calderwood, and Chilhowee developments are based on Fontana's operation and planned discharges and are essentially operated in a run-of-river mode following the daily-cycle peaking operations of Fontana. During periods of high releases from Fontana, these three developments operate 24 hours per day and water is stored at Santeetlah Reservoir, based on available storage, for subsequent releases. During periods of low releases from Fontana, the Cheoah, Calderwood and Chilhowee developments operate a limited number of hours per day at maximum capacity in a modified run-of-river mode. Due to their limited ability to store water, the Cheoah and Calderwood reservoirs are operated with daily pondage and with maximum drawdowns of 7 feet at Cheoah and 6 feet at Calderwood. There is no seasonal drawdown at either development.

Calderwood Powerhouse and Dam are located on a horse-shoe shaped area of the Little Tennessee River known as the Calderwood Bypass. Water from Calderwood Reservoir flows to the powerhouse through an underground tunnel that cuts across the horseshoe area. This diversion of water from the dam creates a "bypassed" reach of the Little Tennessee River mainstem that extends from the dam to the powerhouse. Prior to the Relicensing Settlement Agreement, water flow in the bypass was limited to leakage from the dam and inflows from two small tributaries. In accordance with the new FERC license for the Project, Tapoco maintains minimum instream flows in the Calderwood Bypass.

The Chilhowee Reservoir is operated with daily pondage, a normal fluctuation range of 1 to 2 feet with a minimum outflow, a maximum drawdown of 5 feet from normal full-pool elevation and no seasonal drawdown. At TVA's request, the Chilhowee Development is operated from May 1 to October 31 with a minimum daily average outflow of 1,000 cubic feet per second (cfs) into the Chilhowee tailrace. For the remainder of the year, no minimum flow is required downstream of Chilhowee. TVA's Tellico Dam is located approximately 33 miles downstream of the Chilhowee Dam.

Figure 1: Santeetlah Reservoir Operating Curve



Date	Mar-1	Apr-1	Jun-25	Jul-1	Sep-15	Sep-21	Nov-1	Dec-1
Elevation (ft, USGS)	1931	1936	1936	1937	1937	1936	1936	1931

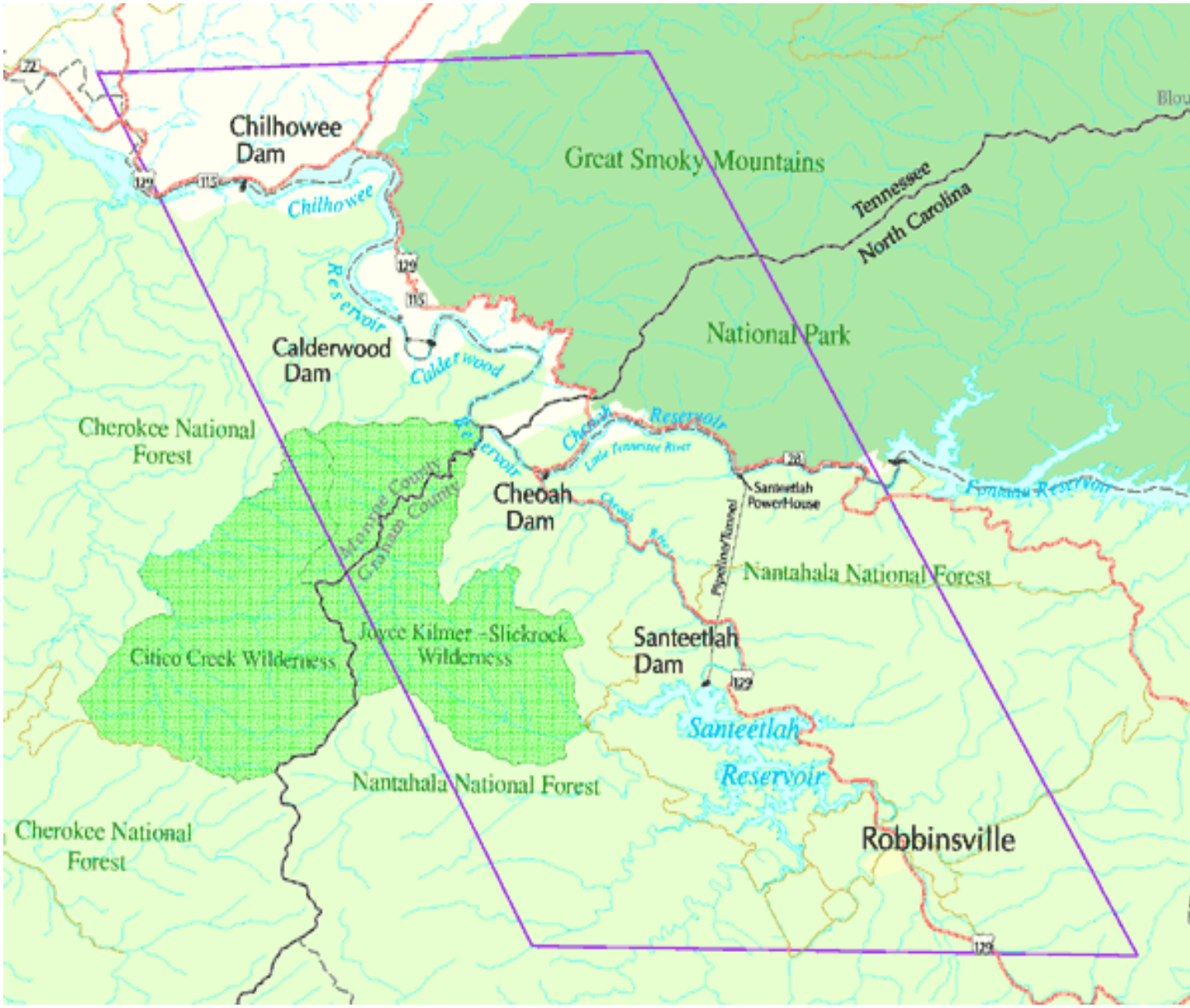
Table 1: Aquatic Base Flows

Month	Tier A Flowrate (cfs)	Tier B Flowrate (cfs)
January	50	50
February	100	90
March	100	90
April	100	90
May	90	80
June	60	60
July	60	50
August	50	40
September	50	40
October	50	40
November	50	40
December	60	50

Table 2: Historic 25th Percentile Average Flows Based on 31-year Period of Record (1971 - 2001)

Month	Threshold Flow (cfs)
January	256
February	446
March	484
April	615
May	617
June	526
July	403
August	289
September	208
October	141
November	116
December	148

Tapoco Project Map



Supplemental Information
For Sections A Through H of the Low Impact Hydro Questionnaire

As background, the Tapoco Hydroelectric Project (FERC No. 2169) was recently relicensed by the Federal Energy Regulatory Commission (FERC) by Order dated January 25, 2005. The new license, based largely on a comprehensive relicensing settlement agreement signed by a supermajority of the relicensing parties and filed with FERC on May 7, 2004, became effective beginning March 1, 2005. The term of the current license is 40 years. APGI began implementing the new license immediately and is in compliance with the new license.

The Tapoco Project Relicensing Settlement Agreement (RSA) outlines protection, mitigation, and enhancement (PME) measures for the Project that address ecological resources as well as other beneficial uses of the Cheoah and Little Tennessee Rivers, including hydropower generation, watershed protection, endangered species enhancement, fish passage and recreational opportunities. The participants in the settlement negotiations included APGI, state and federal resource agencies, the Eastern Band of the Cherokee Indians, local governments, homeowner associations, and local and national non-governmental organizations (NGOs) (see Attachment 1).

The following offers supporting information for Sections A through H of the Low Impact Hydro Questionnaire.

Section A – Flows

Is the facility in compliance with Resource Agency recommendations issued after December 1, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement for both the reach below the tailrace and all bypassed reaches? Yes.

As described in Attachment 2, historically there have been two bypassed river reaches at the Tapoco Project – the Cheoah River bypassed reach and the Calderwood Bypass. The RSA includes agreements to restore flows to both of these bypassed reaches. The details of these agreements are summarized below. The Resource Agencies did not recommend any flow conditions for the Cheoah and Chilhowee tailwaters.

In order to enhance, maintain, and protect fish and wildlife habitat and biological integrity and water quality in the Cheoah River bypass reach, APGI will begin releasing aquatic base flows from Santeetlah Dam starting September 1, 2005 in the magnitude and for the duration described in Table 1. APGI will determine the aquatic base flow for each month by calculating the average daily inflow (ADI) value for the three preceding months. APGI will calculate the ADI using its recorded measures of daily change in reservoir elevation and total discharge (generation flows, instream flow releases, high flow events, and flood discharge flows). If the ADI is greater than the historic 25th percentile average flow for that month (Table 2), APGI will release flows according to

Tier A and if the ADI is less than or equal to the historic 25th percentile average flow for that month, APGI will release flows according to Tier B.

Cheoah River

Table 1: Aquatic Base Flows

Month	Tier A Flowrate (cfs)	Tier B Flowrate (cfs)
January	50	50
February	100	90
March	100	90
April	100	90
May	90	80
June	60	60
July	60	50
August	50	40
September	50	40
October	50	40
November	50	40
December	60	50

Table 2: Historic 25th Percentile Average Flows Based on 31-year Period of Record (1971-2001)

Month	Threshold Flow (cfs)
Jan	256
Feb	446
Mar	484
Apr	615
May	617
Jun	526
Jul	403
Aug	289
Sep	208
Oct	141
Nov	116
Dec	148

APGI will also provide high flow events, which follow a repeating five-year schedule for the term of the license according to Table 3.

Table 3: High Flow Events – 5-year Repeating Schedule

High Flows	**Year 1**		**Year 2**		**Year 3**		**Year 4**		**Year 5**		**Magnitude (cfs)[3]**		
	Events	Total Days Per Month	Events	Total Days Per Month	Events	Total Days Per Month	Events	Total Days Per Month	Events	Total Days Per Month	Day 1	Day 2	Day 3
January													
February	1	2	1	2	1	2	1	2	1	2	1000	Var[1]	
March	1	3	1	3	1	3	1	3	1	3	1000	600[2]	300
April	2	5	3	6	2	5	2	5	3	6	1000	850	300
May	2	4	2	4	3	6	3	6	3	6	1000	850	
June	1	2	1	2					1	2	1000	850	
July					1	2					1000	850	
August							1	1			1000		
September	1	1			1	1					1000		
October	1	1	1	1			1	1			1000		
November	1	1	1	1	1	1	1	1	1	1	1000		
December													
Total Per Year:	10	19	10	19	10	20	10	19	10	20			

1 600 cfs from hour 15 to hour 19, 400 cfs from hour 20 to hour 34; 200 cfs from hour 35 to hour 47; 100 cfs for hour 48

2 600 cfs from hour 16 to hour 36; 300 cfs from hour 37 to hour 48

3 12:00 a.m. (midnight) shall be the starting point for determining the appropriate time for initiating and changing flow releases

In order to allow state and federal agencies to collect three full years of baseline data in the Cheoah River below Santeetlah Dam, APGI will provide high flow events starting September 1, 2005.

On March 1, 2005 APGI began releasing minimum instream flows in the Calderwood Bypass reach of the Little Tennessee River according to the repeating 10-year schedule shown in Table 4. The minimum flow regime varies annually in both discharge and timing (i.e. adjustments in flows will be made on the first Tuesday of the month, no later than 12:00 p.m., so as to not always occur at the end of one month and beginning of another). APGI uses the gate position and headpond elevation to determine the magnitude of the flow release. APGI releases water from the base of the gate, down approximately 6-ft from normal full pond elevation of 1087.8 feet USGS datum.

APGI makes the determination to release minimum instream flows in the Calderwood Bypass according to Scenario A, B or C for each calendar year, so long as the required frequency of each of these scenarios is met within each ten-year period.

Table 4: Calderwood Bypass Instream Flows

Scenario	**A**	**B**	**C**
January	45	50	55
February	40	50	60
March	35	50	65
April	20	40	60
May	30	40	50
June	25	30	35
July	30	30	30
August	20	25	30
September	25	25	25
October	35	30	25
November	45	40	25
December	40	40	40
Average Annual Flow	**32.5 cfs**	**37.5 cfs**	**41.5 cfs**
Frequency	**3/10 years**	**5/10 years**	**2/10 years**

In order to reduce the potential for thermal impacts on stream biota, during the normally hot and dry months of July – September, APGI considers the flows in Table 4 for each month as target flows. APGI operates within a limited flow band around the flow values due to the variation in headpond elevations during normal operation and the small magnitude of some of the required flows. APGI may exceed target flows if water is released upstream or inflows exceed the turbine capacity of the Calderwood Powerhouse or as necessary to pass debris at the dam.

In releasing the target flows into the Calderwood Bypass reach consistent with Table 4, APGI must ensure that the released flows are no greater than 50 cfs above the target flows, except as provided in the previous paragraph, and no lower than 5 cfs below the target flows.

APGI will start releasing aquatic base flows and periodic high flows from Santeetlah Dam beginning September 1, 2005. On September 22, 2004, APGI filed a schedule of 2005 high flows events with FERC, which was accepted by FERC. The first high flow event is scheduled for September 17, 2005. A staff gage has been installed below Santeetlah Dam to measure flows released from the Dam into the Cheoah River and monitor compliance with the requirements outlined in the RSA.

Staff Gage Cheoah River – Joyce Kilmer Bridge

APGI began releasing minimum instream flows into the Calderwood Bypass on March 1, 2005. The RSA allows APGI to reduce minimum instream flows in the Calderwood Bypass for the purpose of safely crossing the Little Tennessee River to utilize the Goat Creek access route to construct, reconstruct, inspect, maintain, or perform related activities to the Calderwood transmission lines. In early March 2005, APGI consulted with the resource agencies about the need to reduce instream flows to complete survey field work necessary to execute the Conservation Easements (also contemplated in the

RSA). By letter dated May 9, 2005 FERC acknowledged this deviation. After completing the survey work, APGI immediately restored the instream flows in the Calderwood Bypass. Flow data is recorded and posted on APGI's Project website at www.alcoa.com/tapoco.

Cheoah Reservoir

Section B – Water Quality

Is the facility either:

a) *in compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification, issued for the facility after December 31, 1986?*
b) *in compliance with the quantitative water quality standards established by the state that support designated uses pursuant to the federal Clean Water Act in the facility area and in the downstream reach?* Yes.

Is the facility area or the downstream reach currently identified by the state as not meeting water quality standards pursuant to Section 303(d) of the Clean Water Act? Yes.

If yes, has there been a determination that the Facility is not a cause of that violation? Yes.

Pursuant to §401 of the Federal Clean Water Act, the State of Tennessee certified on April 29, 2004 and the State of North Carolina certified on November 8, 2004 that the Tapoco Project will not violate applicable water quality standards provided it conforms with the approved plans, specifications, and other information submitted.

The North Carolina certification includes 14 conditions, 11 of which mirror the RSA. The remaining three conditions are in addition to, although not inconsistent with, the RSA. These conditions require APGI to report consumptive withdrawal of water from Santeetlah Reservoir and conduct all activities in a manner consistent with state water quality standards and any other state and federal law, and provide that the certification does not grant or affirm any property rights, license, or privilege in any water or any right of use in any water.

The Tennessee certification contains 21 conditions, 16 of which mirror the RSA. The remaining five conditions are in addition to, but are not inconsistent with, the agreement. They (1) require the conformance of approved plans, specifications, agreements, data and other information submitted in support of APGI's application; (2) prohibit the release of pollutants in flowing water from construction or maintenance activities associated with the project; (3) require that project-related work be carried out in such a manner as will prevent violations of water quality criteria rules; (4) bar any petroleum products or other chemical pollutants from entering state waters; and (5) make the terms and conditions of the certification applicable to any contractors.

Water quality at the Project is generally good. However, the West Buffalo Creek arm of Santeetlah Reservoir is listed as impaired on the 2004 North Carolina 303(d) list due to nutrients as a direct result of nutrient laden discharges from upstream trout farms. Currently there are five operating trout farms located on tributaries to Santeetlah Reservoir. Four are located on West Buffalo Creek and one is located on Snowbird

Creek. Discharges from trout farms, as with other water and wastewater discharges, are controlled by the state. All five trout farms are operated with current NPDES (National Pollution Discharge Elimination System) discharge permits from NCDWQ. Neither Tapoco nor the Federal Energy Regulatory Commission (FERC) has authority to reduce, alter, limit, or in any way control discharges from these trout farms.

The State of North Carolina, however, clearly recognizes the reservoir water quality problems being caused by the trout farm discharges. In June 2000, NCDWQ placed a moratorium on new trout farms in the Santeetlah Reservoir watershed and on expansion of existing operations. NCDWQ also notified trout farm permit holders and the public of potential management strategies that included lowering nutrient (especially phosphorus) permh limits, placing limitations on production, and possible non-renewal of NPDES permits for tout farming in the watershed.

In its most recent Little Tennessee River Basinwide Water Quality Plan (NCDWQ 2002), the NCDWQ recommended that existing NPDES permits on the West Buffalo Creek arm of Santeetlah Reservoir be reevaluated with emphasis placed on total phosphorus effluent reductions. NCDWQ further recommended that no new sources of nutrients into any arms of Santeetlah Reservoir be permitted without a rigorous evaluation of nutrient impacts.

Additionally, the recent 303(d) list for Tennessee (2004) lists the segment of the Little Tennessee River below Calderwood Dam as impaired due to flow alteration as flow is diverted around this section of the river.

To alleviate impacts of the diversion of water from the Little Tennessee River below Calderwood Dam, on March 1, 2005 APGI began releasing minimum instream flows in the Calderwood Bypass reach of the Little Tennessee River according to the repeating 10-year schedule shown in Table 4 (see discussion of Section A above). In its 401 certificate, the state of Tennessee certified that the operation of the Tapoco Project, in conformance with approved plans and specifications, will not violate applicable water quality standards.

APGI is in compliance with both the NC and TN 401 water quality certificates. In accordance with the NC 401 certificate, APGI filed a letter dated April 25, 2005 with FERC which reported that there are no existing or planned consumptive uses at Santeetlah Reservoir of at least 100,000 gallons per day. By letter dated May 23, 2005, FERC acknowledged that APGI had fulfilled this requirement of the 401/FERC license.

Section C – Fish Passage and Protection

Is the facility in compliance with mandatory fish passage prescriptions for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986? Yes.

Is the facility in compliance with mandatory fish passage prescriptions for upstream and/or downstream passage of riverine fish? Yes.

Is the facility in compliance with Resource Agency recommendations for riverine, anadromous, and catadromous fish entrainment protection, such as tailrace barriers? Yes.

The USFWS filed a Prescription for Fishways for the Tapoco Project with FERC, which is appended to the license as Appendix D. The Prescription specifically discusses a fishway for the Chilhowee Development.

Per the USFWS Prescription, fish passage will entail annual funding by APGI for trapping and relocation of certain numbers of each target fish species (turquoise shiner (spotfin chub), yellowfin madtom, smoky madtom, and duskytail darter), each season. Actual numbers of each species will be determined annually in consultation with the U.S. Fish and Wildlife Service. Annual funding shall be used first to accomplish the primary fish passage objective of moving a certain number of each of the target fish species between Abrams Creek and Citico Creek, and between Abrams Creek and the Tellico River. Funding will be used secondarily to conduct associated sampling, marking and genetics testing to help demonstrate that the USFWS's goal of genetic mixing between the sub-populations of the four fish species is being met. Funding can also be used to trap and transport fish between the Tellico River and Citico Creek, to the extent that such efforts may also enhance the overall genetic health of the Abrams Creek populations. These details will be included in a Fish Passage Translocation Plan, required to be filed with FERC by September 1, 2005. This plan is currently being developed in consultation with the USFWS.

The USFWS Prescription also requires APGI to develop and file with FERC a plan for evaluating the presence and status of important potamodramous and diadromous fishes (including but not limited to American eel (*Anguilla rostrata*), Lake sturgeon (*Acipenser fulvenscens*), Black buffalo (*Ictiobus niger*), Smallmouth buffalo (*Ictiobus bubalus*), Sauger (*Sander canadense*), and River redhorse (*Moxostoma carinatum*) in the upper end of Tellico Reservoir in the vicinity of the Chilhowee Dam tailwater. The plan will require initial monitoring within five years of the effective date of the license, with additional monitoring to be conducted in year 10 and year 20 of the license. The plan is currently being developed in consultation with the Resource Agencies (USFWS, USFS, TDEC, TWRA, and NPS). The USFWS will use the data collected under the fish monitoring plan to determine the need for additional fishways at the Chilhowee Development (in

consultation with the USFS, NPS, TDEC, and TWRA). The need for additional fishways for the targeted potamodromous and diadromous fish species will be determined by the USFWS when certain conditions of populations or congregations occur. The presence of significant populations of the target fish species at Chilhowee Dam will be a condition precedent to the requirement of additional fishways.

No additional structural fishway will be required by the USFWS under any circumstances for the passage of the target fish species before year 20 of the license. Subject to this limitation, the Secretary of the Department of Interior reserves the right to require fishways at the Tapoco Project.

The Tapoco Project is in compliance with the USFWS Section 18 Prescription. A draft of the Fish Passage Translocation Plan and the Chilhowee Dam Tailwater Fish Monitoring Plan were distributed to the resource agencies on July 8, 2005 for a required 30-day consultation period. APGI will file the final plans with FERC no later than September 1, 2005. APGI and the USFWS are currently discussing the first disbursement of the required $10,000 annual funding, which is anticipated to occur in late 2005.

Cheoah River

Section D – Watershed Protection

Is there a buffer zone dedicated for conservation purposes extending 200 feet from the high water mark in an average water year around 50-100% of the impoundment, and for all of the undeveloped shoreline? Yes.

Has the facility owner/operator established an approved watershed enhancement fund that: 1) could achieve within the project's watershed the ecological and recreational equivalent of land protection in the above, and 2) has the agreement of appropriate stakeholders and state and federal resource agencies? Yes.

Has the facility owner/operator established through a settlement agreement with appropriate stakeholders and that has state and federal resource agencies agreement an appropriate shoreland buffer or equivalent watershed land protection plan for conservation purposes? Yes.

Is the facility in compliance with both state and federal resource agencies recommendations in a license approved shoreland management plan regarding protection, mitigation, or enhancement of shorelands surrounding the project? Yes.

The RSA included many commitments aimed at protecting the resources of the Little Tennessee River Basin including land protection, watershed trust funds, and a shoreline management plan.

Land Protection

In addition to the 7,839 acres owned within the Project boundary, APGI owns and manages approximately 12,725 acres of non-Project land. In the RSA APGI agreed to grant The Nature Conservancy options to acquire title to a significant portion of this non-Project acreage for reconveyance to a federal or state agency. The primary purpose of these conservation easements is to retain land and water areas predominantly in their natural, scenic, open or wooded condition or as suitable habitat for fish, plants or wildlife and preserve the historical, architectural, archaeological, or cultural aspects of the properties. The total number of acres to be protected through the conservation easements is approximately 11,000 acres. About 800 acres of the total are riparian (Project and non-Project) areas along the Project reservoirs. APGI is currently establishing conservation easements to be executed by September 1, 2005 (see APGI Lands Map).

Trust Funds

APGI has also established the North Carolina Resource Management and Enhancement Fund (North Carolina Fund) to be used by the North Carolina Wildlife Resources Commission, North Carolina Department of Environment and Natural Resources, U. S. Forest Service, Eastern Band of Cherokee Indians, and U. S. Fish and Wildlife Service

and Tallassee Fund to be used by the U. S. Forest Service, U. S. Fish and Wildlife Service, Great Smoky Mountains National Park, Tennessee Department of Environment and Conservation, Tennessee Wildlife Resources Agency, Eastern Band of Cherokee Indians and The Nature Conservancy of Tennessee for natural resource stewardship and Project mitigation activities.

The North Carolina Fund must be used within the scope of subject matter of the Fish and Wildlife Coordination Act, the Endangered Species Act, and Section 10 of the Federal Power Act including but not limited to 1) monitoring of biotic and abiotic parameters, 2) addition of large woody debris, and gravel and vegetation management in the Cheoah River below Santeetlah Dam, and 3) for other natural resource stewardship activities, including, but not limited to, a) threatened and endangered species recovery efforts, b) control of exotic species and environmental outreach and c) education directly related to those Cheoah River and Little Tennessee River basin resources affected by ongoing Project operations, in particular the Santeetlah and Cheoah developments, and the portion of the Calderwood Development in North Carolina. By September 1, 2005, APGI will deposit an initial payment of $100,000. Thereafter for the duration of this license except for the final three years of the license term, APGI will deposit annually an additional $25,000. Monies in the fund shall be held and managed by an entity unanimously agreed to by the beneficiary entities listed above and APGI.

APGI also established the Tallassee Fund, which will be managed by the USFWS, USFS, Great Smoky Mountains National Park, Tennessee Department of Environment and Conservation, Tennessee Wildlife Resources Agency, the Eastern Band of the Cherokee Indians, The Nature Conservancy of Tennessee, the National Parks Conservation Association, the Tennessee Clean Water Network, and American Rivers for 1) threatened and endangered species recovery efforts, 2) ecosystem enhancements and restoration, 3) management and control of exotic species, and 4) environmental outreach and education directly related to the Tapoco Project and non-Project lands in Tennessee currently owned by APGI to mitigate the continuing environmental impacts associated with the Project's operations. APGI will deposit an initial payment of $100,000. Thereafter for the duration of this License, APGI will deposit annually an additional $100,000, by no later than January 31. Monies in the Fund shall be held and managed by an entity unanimously agreed to by the beneficiary agencies listed above and APGI.

Shoreline Management Plan

APGI filed a Shoreline Management Plan (SMP) for the Project with FERC on October 1, 2004. APGI prepared the Shoreline Management Plan in consultation with North Carolina Department of Environment and Natural Resources, North Carolina Wildlife Resources Commission, North Carolina State Historic Preservation Office, U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Indian Affairs, Great Smoky Mountains National Park, Eastern Band of Cherokee Indians, Cross Creek Property Owners Association, Friends of Lake Santeetlah, Town of Lake Santeetlah, Town of

Robbinsville, Graham County, Sierra Club, American Rivers, Tennessee Clean Water Network, The Nature Conservancy, Tennessee Department of Environment and Conservation, Tennessee Wildlife Resources Agency, Tennessee Historic Commission and Tennessee State Historic Preservation Office.

Upon FERC's request for Comments, motions to intervene and protests on the Shoreline Management Plan, several key Resource Agencies, U.S Department of Interior, U.S Forest Service, and North Carolina Wildlife Resources Commission, recently filed letters of support for the SMP.

The U.S. Department of Interior stated "We are pleased with the balance of shoreline uses afforded by the SMP and its shoreline classification and are encouraged that the primarily undeveloped characteristics of the Project developments will be retained for the benefit of fish and wildlife and their habitats as well as fish-and-wildlife-based recreation for the American public…We have worked with APGI and other parties and believe that the SMP adequately protects, enhances, and mitigates the ongoing and future impacts of the Project."

The NCWRC stated "The NCWRC was actively involved in the development of the shoreline management plan submitted by Alcoa Power Generating Inc. (APGI). We strongly support the shoreline management plan as written. We very much appreciate APGI's commitment to the protection of fish and wildlife resources and habitats in the project area."

Santeetlah Reservoir

APGI Lands Map

TP804c.pdf

Section E – Threatened and Endangered Species Protection

Are threatened or endangered species listed under state or federal Endangered Species Acts present in the facility area and/or downstream reach? Yes.

If a recovery plan has been adopted for the threatened or endangered species pursuant to Section 4(f) of the Endangered Species Act or similar state provision, is the facility in compliance with all recommendations in the plan relevant to the facility? Yes.

If the facility has received authority to incidentally take a listed species, is the facility in compliance with conditions pursuant to that authority? Not applicable.

Has the applicant demonstrated that the facility and facility operations do not negatively affect listed species? Yes.

During studies conducted for the Project relicensing, 23 rare, threatened, and endangered species were located within the Project boundary: 12 were animal species (3 birds, 3 salamanders, 3 mammals, 2 fish, and 1 lizard) and 11 were plant species (5 herbaceous flowering species, 2 trees, 2 ferns, 1 moss, and 1 hornwort) as listed in Table 5. All of the species listed in Table 5 warrant formal protection under state or federal statutes. The bald eagle is federally listed as "threatened", but has been proposed for delisting. Although the peregrine falcon was removed from federal listing, it remains state listed in both North Carolina and Tennessee. Additionally, the Junaluska salamander, historically known to inhabit the upper reaches of the Cheoah River just below Santeetlah Dam, and the Southern Appalachian woodrat are listed as "Federal Species of Concern". All other species are listed at the state level.

Table 5: Federally or State Listed Rare, Threatened, and Endangered Species Located in 1999 within the Tapoco Project Boundary

Species	Family	Rank and Listing	Habitat Requirements
Animal Species			
Peregrine Falcon (*Falco peregrinus*)	Bird	Very rare and critically imperiled; endangered (NC and TN)	Nests are usually situated over lakes, marshes, swamps, rivers, as well as over coniferous and riparian forests adjacent to the nesting habitat
Bald Eagle (*Haliaeetus leucocephalus*)	Bird	Federally listed as Threatened; extremely rare and critically imperiled and threatened (TN); imperiled and endangered (NC)	Near seacoasts, rivers, and large lakes breeding in tall trees or on cliffs
Osprey (*Pandion haliaetus*)	Bird	Very rare and imperiled; threatened (TN)	Rivers, lakes, coasts
Hellbender (*Cryptobranchus alleganiensis*)	Salamander	Rare and uncommon (NC and TN); deemed in need of management (TN); species of special concern (NC)	Clear, fast-flowing streams and rivers with rocky bottoms; adjacent terrestrial habitat

Species	Family	Rank and Listing	Habitat Requirements
Blackbelly Salamander (*Desmognathus quadramaculatus*)	Salamander	Very rare and imperiled; deemed in need of management (TN)	Sizable swift and boulder-strewn mountain streams, at elevations of 1,600-5,000 feet
Junaluska Salamander (*Eurycea Junaluska*)	Salamander	Federal species of concern; extremely rare and critically imperiled; deemed in need of management (TN); imperiled species of special concern (NC)	Lower elevations of the Appalachian Mountains under logs and rocks along streams
River Otter (*Lutra Canadensis*)	Mammal	Rare and uncommon; threatened (TN)	Streams, lakes, ponds, swamps, marshes, estuaries
Southern Appalachian Woodrat (*Neotoma floridana* ssp. *haematoreia*)	Mammal	Federal Species of Concern; extremely rare and imperiled; deemed in need of management (TN); imperiled species of concern (NC)	Rock strewn sites, usually mountaintops and valley sides
Meadow Jumping Mouse (*Zapus hudsonius*)	Mammal	Widespread, abundant, and apparently secure; deemed in need of management (TN); rare or uncommon watch species (NC)	Open grassy fields; abundant in thick vegetation near ponds, streams, and marshes in woodland areas
Indiana Bat (*Myotis sodalis*)[1]	Mammal	Federally listed as Endangered; endangered (TN and NC)	During the summer, roost and forage in floodplain and riparian forests. Trees normally used as primary roosts are dead and have a diameter at breast height greater than 12 inches. During the winter, roost sites are in caves or mines that maintain temperatures between 37^{o}F and 43^{o}F.
Smoky Dace (*Clinostomus funduloides* ssp.)	Fish	Extremely rare and critically imperiled; deemed in need of management (TN); imperiled; special concern (NC)	Sand and rock-bottomed pools and backwaters of clear, cool, swift shallow streams of small to medium size
Tuckaseegee Darter (*Etheostoma blennioides* ssp. *gutselli*)	Fish	Widespread, abundant, and apparently secure; endangered (TN)	Swift riffle areas with boulder, bedrock, or coarse cobble substrates in small to moderate rivers
Green Anole (*Anolis carolinensis*)	Lizard	Rare and uncommon; deemed in need of management (TN)	This species is arboreal, selecting moist habitats with trees, shrubs, and vine tangles; also found on man-made structures such as fences, homes, bridges
Appalachian Elktoe (*Alasmidonta raveneliana*)[1]	Mussel	Federally listed as Endangered; endangered (TN and NC)	Native to streams and rivers of the southern Appalachian region. Most often found in riffles, runs, and shallow flowing pools with stable, relatively silt-free, coarse sand and gravel substrate associated with cobble, boulders, and/or bedrock. Known to be endemic only to the upper Tennessee River system.
Plant Species			

Species	Family	Rank and Listing	Habitat Requirements
Climbing Fumitory (*Adlumia fungosa*)	Herbaceous	Very rare and imperiled; threatened (TN); imperiled; significantly rare (NC)	Woods, moist coves, and rock outcrops
White-leaved Leatherflower (*Clematis glaucophylla*)	Herbaceous	Extremely rare and critically imperiled; threatened proposed endangered (TN); candidate species (NC)	Moist woods and along streams
Branching Whitlow Grass (*Draba ramosissima*)	Herbaceous	Very rare and imperiled; species of special concern (TN); imperiled and significantly rare (NC)	Dry mountain woodlands, over limestone
Buffalo Clover (*Trifolium reflexum*)	Herbaceous	Rare and uncommon; species of special concern (TN); critically imperiled; watch species (NC)	Open woods and clearings
Eastern Turkey beard (*Xerophyllum asphodeloides*)	Herbaceous	Rare and uncommon; threatened (TN); threatened watch species (NC)	Pine barrens, dry oak-hickory forest with a strong pine component
Carolina-star Moss (*Plagiomnium carolinianum*)	Moss	Extremely rare and critically imperiled; species of special concern (TN); imperiled candidate species (NC)	Moist, granitic rock (or humus-covered rock), especially on cliff ledges near streams or waterfalls
Chalk Maple (*Acer saccharum*)	Tree	Very rare and imperiled; uncommon species (TN)	Rocky woods, along the banks of streams, rocky gorges, in moist soil; often at the base of rocky bluffs
Butternut (*Juglans cinerea*)	Tree	Federal Species of Concern; very rare and imperiled and threatened (TN); imperiled and rare (NC)	Moist, rich soils; will also grow on drier, rocky limestone soils
American Pillwort (*Pilularia americana*)	Fern	Extremely rare and critically imperiled; species of special concern (TN)	Edges of ponds, reservoirs (in draw down zones), vernal pools, pools on granitic outcrops
Dwarf Bristle Fern (*Trichomanes petersii*)	Fern	Very rare and imperiled; threatened (TN); critically imperiled threatened (NC)	Cliffs and overhanging ledges or sometimes epiphytic on the bases of tree trunks; also in moist ravines, or on the faces of sandstone, igneous or metamorphic boulders; ledges overhanging streams
Megaceros aenigmaticus	Hornwort	Extremely rare and critical; uncommon (TN); imperiled candidate species (NC)	Rocks along small, fast-flowing mountain streams and the spray zones around waterfalls and cascades; mature forest canopy and moist conditions
Virginia Spiraea (*Spiraea virginiana)* [1]	Shrub	Federally listed as Threatened; endangered (TN and NC)	Disturbed areas along rivers and streams. Flood scouring is essential since it inhibits competition. Also found along slow changing, dependable riparian areas.

[1]Although these species were not located within the Project Boundary during the 1999 Inventory referenced above, they are included in this table based upon studies conducted during the relicensing of the Tapoco Project and after the 1999 Inventory.

The USFWS filed a "Biological Assessment for the Tapoco Settlement Agreement" with FERC (this Assessment is appended to the RSA). This Assessment concluded that none of the activities described in the RSA (e.g., Project operations, recreational enhancements etc.) are anticipated to have adverse effects on RTE species. In some cases, the activities described in the RSA would have a beneficial effect.

The following is a discussion of Project effects on the Federally listed rare, threatened or endangered (RTE) species known to occur or potentially occurring at the Tapoco Project.

Appalachian Elktoe

The Appalachian elktoe is an endangered rare freshwater mussel known to occur in the Cheoah River. The Cheoah River from Santeetlah Dam to the confluence with the Little Tennessee River was designated as critical habitat for this species in 2002. Modifications to the flow regime of the Cheoah River as part of the Relicensing Settlement Agreement were designed with this species under consideration. In August 1996, the USFWS approved and published an Appalachian Elktoe Recovery Plan. The immediate goal of the recovery plan is to maintain the only known surviving populations of the species and to protect its remaining habitat from present and foreseeable threats. The intermediate goal of the plan is to restore and maintain the species throughout a significant portion of its historic range and to downlist the species from endangered to threatened status.

More recently, the USFWS designated critical habitat for the Appalachian elktoe under the Endangered Species Act (ESA) (Federal Register, Vol. 67, No. 188: September 27, 2002). A portion of the Tapoco Project, the Cheoah River from the Santeetlah Dam downstream to its confluence with the Little Tennessee River (9.1 miles), is designated as critical habitat for the Appalachian elktoe. The basis for the designation was that the Cheoah River is currently occupied by the species and provides the physical and biological habitat elements necessary for the life cycle needs of the species.

Under the new license there are no operational changes or Project modifications that are likely to conflict with the USFWS's management of the Appalachian elktoe. In fact, the Cheoah River aquatic base flow regime and disturbance flow regime (see discussion of Section A above), which is based on the concept of restoring more natural-like flow conditions to the Cheoah River, is expected to increase the amount of available useable habitat for the elktoe and provide significant increases in habitat for adult and juvenile mottled sculpin, a known elktoe fish host. In addition, APGI is required to develop a RTE Species Management Plan (to be filed with FERC within 30 months of March 1, 2005), which will identify other measures that might be needed to ensure protection of the Appalachian Elktoe and its habitat at the Tapoco Project.

Indiana Bat

The Indiana bat is listed as endangered by the USFWS that is known to occur within the region of the Project but was not located within the Project Boundary. In March 1999,

the USFWS issued a second Indiana bat revised recovery plan (Agency Draft Indiana Bat (*Myotis soldalis*) Revised Recovery Plan). The short-term recovery objective of the plan is to halt and reverse the continued decline of the Indiana bat. In the long-term, the USFWS hopes to delist the species. The purpose of the revised recovery plan is four-fold: 1) to update the recovery plan with information on the life history and ecology of the Indiana bat gathered since 1983; 2) to highlight the continued and accelerated decline of the species; 3) to continue site protection and monitoring efforts at hibernacula; and 4) to focus new recovery efforts towards research to determine the factor(s) causing population declines.

The habitat of most concern for the Indiana bat at the Project are potential roost trees. While it is unknown whether there are any roost trees located around Santeetlah Reservoir or the Cheoah River, none of the operational and non-operational resource enhancement measures described in the RSA would be expected to adversely impact any trees of a size that is likely to be used by the Indiana bat. In addition, APGI will develop a RTE Species Management Plan, which will identify any measures that are needed to ensure protection of the Indiana bat and its habitat at the Tapoco Project.

Virginia Spiraea

The Virginia spiraea is a federally listed endangered plant species that is known to inhabit the banks of the Cheoah River downstream of Santeetlah Dam. In November 1992, the USFWS approved and published a management recovery plan for the Virginia spiraea. The recovery objective is to delist the species. To be considered for delisting, certain recovery criteria must be met. Delisting will be considered when 1) three stable populations are permanently protected in each drainage where populations are currently known; 2) stable populations are established on protected sites in each drainage where documented vouchers have been collected; 3) potential habitat in the states with present or past collections has been searched for additional populations; and 4) representatives of each genotype are cultivated in a permanent collection. The USFWS recovery strategy for the Virginia spiraea is sequential: preserve, understand, extend knowledge, manage, and monitor.

APGI's operation of the Project as described in the RSA will support the recovery of the Virginia spiraea. Periodic spill events combined with disturbance flows in the Cheoah River (discussed in Section A above) are anticipated to benefit the plant by reducing shading and competition from other plants and by promoting asexual propagation.

Fish

APGI continues to support ongoing and future fish reintroduction efforts in Abrams Creek, a tributary to Chilhowee Reservoir: Currently, APGI is developing a fish passage translocation plan cooperatively with the USFWS to translocate four identified rare, threatened and endangered (RTE) fish species to Abrams Creek from Citico Creek and

the Tellico River. Additionally, the goals of the fish passage translocation plan include enhancement of the overall genetic health of the Abrams Creek, Citico Creek, and Tellico River fish populations, and the genetic mixing between the sub-populations of the four target fish species.

APGI's fish reintroduction efforts are currently targeting: 1) the turquoise shiner (spotfin chub), federally listed as threatened by the USFWS (September 9, 1977) and considered threatened in North Carolina and endangered in Tennessee; 2) the yellowfin madtom, federally listed as threatened (September 9, 1977) and considered endangered in Tennessee; 3) the smoky madtom, federally listed as an endangered species on October 26, 1984 and listed as endangered by the State of Tennessee; and 4) the duskytail darter, listed as endangered by the USFWS on April 27, 1993 and listed as endangered by the State of Tennessee. Concurrent with the smoky madtom listing, the USFWS also designated Citico Creek from the Cherokee National Forest boundary at upper Citico Creek bridge on Mountain Settlement Road upstream to the confluence of Citico Creek with Barkcamp Branch as critical habitat.

Generally, these four RTE species are considered as "possibly occurring" in Project waters. The spotfin chub is considered as "possibly occurring" in a portion of Abrams Creek that lies within the Project. The only other habitat within the Project that may be suitable to support the spotfin chub is the Cheoah River downstream of Santeetlah Dam. Since the yellowfin madtom, duskytail darter, and smoky madtom are known to occur in the free-flowing portion of Abrams Creek outside the Project boundary, these species may also exist in the short stretch of free-flowing Abrams Creek that is within the Project boundary.

The USFWS has published recovery plans for all four species. Generally, the goal of the recovery plans is to restore viable populations of each species to a significant portion of its historic range and remove each species from the federal endangered species list. Additionally, the goal of the Smoky Madtom Recovery Plan's is to restore four viable populations of the smoky madtom and to protect the species and its habitat to such a degree that the species no longer qualifies for protection under the Endangered Species Act.

APGI's fish reintroduction efforts support the overall goal of the recovery plans. Additionally, APGI's recent change in operation of Santeetlah Dam to provide aquatic base flows and high flow events in the Cheoah River might provide habitat enhancement for the spotfin chub, if indeed it still exists there. Overall, the Project is considered to have no impacts on these species and the Relicensing Settlement Agreement and fish passage translocation plan will benefit these species. Tapoco will also develop a RTE Species Management Plan, which will identify other measures that could be used to assist in the protection and enhancement of the spotfin chub, yellowfin madtom, smoky madtom, and duskytail darter and their habitat at the Tapoco Project, to the extent they exist in the Project.

Section F – Cultural Resource Protection

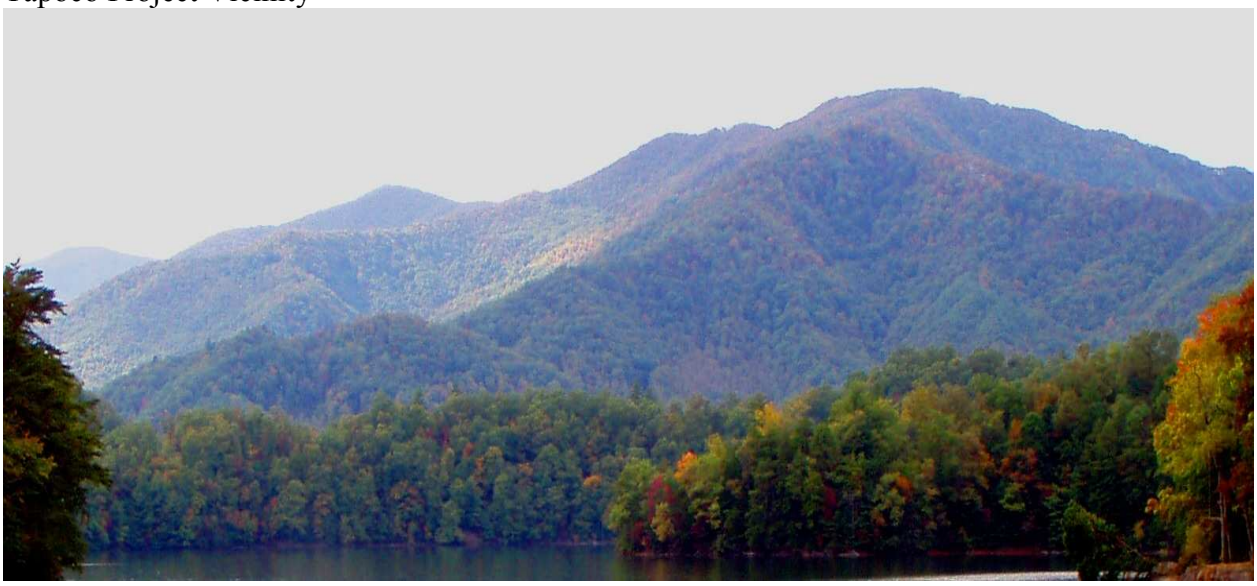
If FERC-regulated, is the facility in compliance with all requirements regarding cultural resource protection, mitigation, or enhancement included in the FERC license or exemption? Yes.

The Tapoco Project is rich in historical and cultural resources.

On August 25, 2004, FERC executed a Programmatic Agreement for the Tapoco Project. The Programmatic Agreement, signed by FERC, the North Carolina and Tennessee State Historic Preservation Offices, the U.S. Forest Service, and APGI, was subsequently sent to the Advisory Council on Historic Preservation on September 9, 2004. The Programmatic Agreement outlines stipulations that must be followed by APGI during the term of its new license. The Programmatic Agreement specifically discusses management of historic properties, interim treatment of historic properties, and the development and implementation of a Historic Properties Management Plan (HPMP). APGI continues to implement the provisions of the Programmatic Agreement for the Project, in accordance with its terms.

APGI is currently developing an HPMP in consultation with the North Carolina State Historic Preservation Office, the Tennessee Historical Commission, the Tennessee State Historic Preservation Office, the Eastern Band of Cherokee Indians, the Bureau of Indian Affairs, the U.S. Forest Service and the Great Smoky Mountains National Park (the CR Workgroup). The HPMP will be submitted to FERC by March 1, 2006.

Tapoco Project Vicinity



Section G – Recreation

If FERC-regulated, is the facility in compliance with the recreational access, accommodation (including recreational flow releases) and facilities conditions in its FERC license or exemption? Yes.

Does the facility allow access to the reservoir and downstream reaches without fees or charges? Yes.

The Tapoco Project provides 37 recreation access areas, which provide opportunities for picnicking, camping, boating/paddling, swimming, fishing, and hiking (see Tables 6-9). APGI provides access to these recreation opportunities at no cost to the public. Tapoco operates and maintains, solely or in cooperation with state and/or federal resource agencies, 21 of these areas, while the others are managed by the U.S. Forest Service (USFS), Tennessee Valley Authority (TVA), North Carolina Wildlife Resource Commission (NCWRC), or North Carolina Department of Transportation (NCDOT).

Massey Branch Accessible Fishing Pier – Santeetlah Reservoir

Table 6: Santeetlah Reservoir Multi-Use Recreation and Access Facilities Available for Public Use

Site	Type	Fee	Ramp	Lane	Park-ing	Boat Temporary Tie-up Docks	Campsites
Santeetlah Dam Overlook	Access				10		
Cheoah Point Boat Access	Boat Launch Ramp		1	1	38	1	
Cheoah Point Campground	Camping	Yes			26		26
Cheoah Point Day Use Area	Swimming, Picnicking, Access				33		
East Buffalo Branch Campsites	Camping						9
Ted Jordan Wayside Area	Access (visual only)				10		
Massey Branch Wayside Picnic Area	Picnicking				10		
Massey Branch Wayside Camping	Camping				1		1
Massey Branch Boat Access Area	Boat Launch Ramp		1	1	15	1	
Snowbird Picnic Area	Picnicking				5		
Long Hungry Road Camping	Camping						6
Santeetlah Road Wayside	Access (visual only)				6		
Rattler Ford Group Camp	Camping	Yes					16
Horse Cove Campground	Camping	Yes					18
Joyce Kilmer Trailhead Parking	Access				25		
Avey Branch Boat Access	Boat Launch Ramp		1	1	35		
Atooga Branch Camping Area	Camping						2
Santeetlah Reservoir Dispersed Campsites	Camping						53
FACILITY TOTAL	18	3	3	3	214	2	131

Table 7:Cheoah Reservoir Multi-Use Recreation and Access Facilities Available for Public Use

Site	Type	Fee	Ramp	Lane	Park-ing	Boat Temporary Tie-up Docks	Campsites
Panel Branch Boat Access Area	Boat Launch Ramp		1	1	25		
Farley Branch Boat Access Area	Boat Launch Ramp		1	1	8	1	

NC Highway 28 Wayside Pull-offs	Access (visual only)				7		
Twenty-Mile Creek Lake Access Area	Launch (unimproved), Access		1	1	4		1
Cheoah Dam Overlook	Access (visual only)				16		
FACILITY TOTAL	5		3	3	60	1	1

Table 8: Calderwood Reservoir Multi-Use Recreation and Access Facilities Available for Public Use

Site	Type	Fee	Ramp	Lane	Park-ing	Boat Temporary Tie-up Docks	Campsites
Magazine Branch Boat Access and Picnic Area	Boat Launch Ramp (one of which is unimproved), Picnicking		2	2	15	1	5
Slickrock Creek Boat-in Campsite	Launch (unimproved), Camping		1	1			1
Cheoah Powerhouse Tailrace Fishing Access	Fishing, Access				15		
Slickrock Creek Trailhead Parking	Access				16		
U.S. Highway 129 Pull-offs	Picnicking				12		
Calderwood Overlook	Access (visual only)				6		
FACILITY TOTAL	6		3	2	64	1	6

Table 9: Chilhowee Reservoir Multi-Use Recreation and Access Facilities Available for Public Use

Site	Type	Fee	Ramp	Lane	Park-ing	Boat Temporary Tie-up Docks	Campsites
Calderwood Village Day Use Area	Picnicking					1	
Tab Cat Boat Access Area	Boat Launch Ramp		1	1	11		
Gravel Pile Boat Access Area	Boat Launch Ramp, Picnicking		1	1	11		
Abrams Creek Bridge Pull-off Access Area	Launch (unimproved), Access		1	1			
Happy Valley Boat Access Area	Boat Launch Ramp		1	1	6	1	
Chigger Beach Boat-in Access Area	Launch (unimproved)		1	1			

Site	Type	Fee	Ramp	Lane	Park-ing	Boat Temporary Tie-up Docks	Campsites
U.S. Highway 129 Pull-off Camping and Picnicking Areas	Access, Picnicking, Camping				6		6
Pear Tree Boat Access and Camping Area	Boat Launch Ramp, Camping		1	1	20		10
FACILITY TOTAL	8		6	6	54	2	16

In addition to continuing to operate and manage these existing public access recreation areas, APGI agreed, in the RSA, to add new public recreation facilities and upgrade existing facilities at the 37 access areas. Specifically, APGI made recreational funding commitments for facility enhancements and upgrades to the USFS, NCWRC, and Tennessee Wildlife Resources Agency (TWRA). APGI will consult with the U.S. Forest Service (USFS), the North Carolina Wildlife Resources Commission (NCWRC) and Tennessee Wildlife Resources Agency (TWRA) annually to prioritize recreational enhancements to be implemented for the following year based on funding availability and other relevant considerations. The first annual meeting has been scheduled for July 21, 2005. APGI will also provide funds annually to support operations and maintenance costs for recreational facilities and related purposes. Additionally, APGI is contributing funds annually, on a cost-share basis, to TWRA for recreational fish stocking in Calderwood Reservoir. Table 10 summarizes the specific funding commitments made by APGI in the RSA. APGI's new license requires APGI to file a Recreation Plan, which will memorialize these commitments, with FERC no later than March 1, 2006.

Table 10: Recreation Facilities Funding Commitments

New and/or Upgraded Recreation Facilities	Total Cost Estimate	APGI Funding Commitment
Santeetlah Reservoir		
Expand/Improve Massey Branch Boat Launch	$228,541	$66,277
Cheoah Point Access Improvements	$60,600	$17,574
Cheoah Point Campground new construction and replacements	$1,810,000	$787,350
Dispersed campsite improvements	$80,500	$35,000
Avey Branch Boat Launch improvements	$92,445	$26,809
Bank fishing improvements	$48,000	$20,880
Subtotal Santeetlah	**$2,320,086**	**$953,890**
Cheoah River		
US 129 Access Areas – Phase 1	$225,000	$97,875
US 129 Access Areas – Phase 2	$96,000	$41,760
Two additional gravel lots on 129	$23,001	$6,667
Trail along Cheoah River	$206,900	$90,000
Accessible fishing pier	$50,000	$25,000
Boater put-in facilities	$565,000	

Boater take-out facilities	$210,000	
Subtotal Cheoah River	**$1,375,901**	**$261,302**
Cheoah Reservoir		
Canoe portage around dam	$100,000	$100,000
Improved bank fishing facilities	$10,000	$10,000
Relocate Panel Branch Boat Access	$150,000	$75,000
Calderwood Reservoir		
Five primitive campsites	$15,700	$15,700
Canoe/kayak take-out	$75,000	$75,000
Fish delivery chute	$10,000	$10,000
Chilhowee Reservoir		
Canoe portage	$25,000	$25,000
Two accessible fishing piers	$100,000	$50,000
Improve day-use areas	$10,000	$10,000
Subtotal Mainstem Reservoirs	**$495,700**	**$370,700**
Total Facility Cost Commitment	**$4,191,687**	**$1,585,892**
Recreation Related Annual O&M		
USFS recreation facilities	$161,500	$34,000[1]
APGI recreation facilities	$31,000	$26,000[2]
Additional cleanup/maintenance of 129 day-use areas	$15,000	$15,000
Recreational fish stocking in Calderwood Reservoir	$20,000	$10,000
Total Annual O&M Cost Commitment	**$227,500**	**$85,000**

[1] The USFS will operate and maintain the public boating access areas located on National Forest System lands on Santeetlah Reservoir and use a portion of the funding for this purpose in accordance with the agreement between the USFS and the NCWRC.

[2] Of this total, $5,000 is committed to cost share boating facility operations and maintenance with the NCWRC for the new Llewellyn Branch boating access site and the existing Calderwood Reservoir boating access site.

Section H – Facilities Recommended for Removal

Is there a Resource Agency recommendation for removal of the Dam associated with the facility?

None of the local, state, or federal resource agencies have formally requested that any of the four Project developments be removed. This position is supported by the comments and Terms and Conditions filed with FERC in September 2003 by the resource agencies.

Attachment 3 - Distribution of Generation Capacity By Project and Unit

Units	Original Nameplate Capacity	Capacity Under Previous FERC License (MW)	Capacity Under 2005 FERC License (MW)	Estimated Modernization Date
Santeelah 1	20.0	24.6	23.5	2013
Santeelah 2	20.0	24.6	23.5	2014
Total Santeelah	**40.0**	**49.2**	**47.0**	
Cheoah 1	22.0	22.0	27.5	2014
Cheoah 2	22.0	22.0	27.5	2015
Cheoah 3	22.0	22.0	27.5	2007
Cheoah 4	22.0	22.0	27.5	2007
Cheoah 5	30.0	30.0	34.7	2019
Total Cheoah	**118.0**	**118.0**	**144.7**	
Calderwood 1	39.0	46.8	46.8	May-06
Calderwood 2	39.0	46.8	46.8	July-02
Calderwood 3	39.0	46.8	46.8	August-05
Total Calderwood	**117.0**	**140.4**	**140.4**	
Chilhowee 1	17.0	17.4	16.0	2011
Chilhowee 2	17.0	17.4	16.0	2012
Chilhowee 3	17.0	17.4	16.0	2013
Total Chilhowee	**51.0**	**52.2**	**48.0**	
Total Tapoco	**326.0**	**359.8**	**380.1**	