

# GABRIELA GOLDFARB CONSULTING

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October 27, 2005

Fred Ayer, Executive Director  
Low Impact Hydropower Institute  
34 Providence St.  
Portland, ME 04103

Subject: Final Application Reviewer Report for the Tapoco Hydroelectric Project (FERC License No. 2169)

Dear Fred:

Attached please find my final reviewer's report on the application by Alcoa Power Generating, Inc. for certification of the Tapoco Hydroelectric Project by the Low Impact Hydropower Institute (LIHI). Please contact me with any questions or concerns.

Best regards,

s//Gabriela

Gabriela Goldfarb

Attachment: as described.

**Review of the Low Impact Hydropower Institute  
Application for Certification:**

**Tapoco Hydroelectric Project**

**Introduction and Overview**

This report reviews the application submitted by Alcoa Power Generating, Inc. (APGI or applicant) to the Low Impact Hydropower Institute (LIHI) for Low Impact Hydropower Certification for the 347 megawatt (MW) Tapoco Hydroelectric Project (project or facility) in North Carolina and Tennessee. The project consists of the four developments shown in Table 1.

<b>Table 1: Overview of Tapoco Project Development Locations</b> (Listed upstream to downstream)		
<b>Development</b>	<b>River</b>	<b>County &amp; State</b>
Santeetlah	Cheoah (dam site) at river mile 9, Little Tennessee River (powerhouse site) at river mile 57	Graham County, North Carolina
Cheoah	Little Tennessee River between river miles 51 and 52	Graham and Swain Counties, North Carolina
Calderwood	Little Tennessee River between river miles 42 and 44	Graham and Swain Counties, North Carolina, and Blount and Monroe Counties, Tennessee
Chilhowee	Little Tennessee River between river miles 33 and 34	Blount and Monroe Counties, Tennessee

On January 25, 2005 the Federal Energy Regulatory Commission (FERC) issued the project a 40 year license (FERC License No. 2169) effective March 1, 2005. The license includes conditions reflecting most of the provisions of a collaborative settlement (“Settlement Agreement” or “SA”) filed with FERC on May 7, 2004. The Settlement Agreement includes additional provisions that were not included in the FERC license. In addition, the signatories to the Settlement Agreement entered into a memorandum of understanding (MOU) dated February 24, 2005 to address inconsistencies between the FERC license and the Settlement Agreement. Each of these is discussed in more detail below.

Project and site characteristics. The project boundary includes approximately 5,800 acres of water and 2,650 acres of land. According to the applicant a 200-foot zone extending around the project’s impoundments (including lands not owned by APGI, and excluding lands along the Cheoah River) totals 3,304 acres. Part of the project occupies federal lands within the Nantahala National Forest. As noted above, three of the four developments comprising the project are located along the Little Tennessee River. The fourth, Santeetlah, consists of a dam on the Cheoah River (a tributary to the Little Tennessee River) that diverts water to a powerhouse on the Little Tennessee River. (See Exhibit A, “Tapoco Project Map.”) The four developments are operated as daily peaking facilities that are integrated components of the Tennessee Valley Authority (TVA) system. As noted in the project’s FERC license:

*TVA schedules the Tapoco power station generators based on its planned schedule for operating the Fontana Dam [7.5 miles upstream of the Cheoah development], with consideration for the Santeetlah Reservoir operating guide curve. TVA forecasts Fontana Dam operations and provides APGI with a flow/generation schedule for the next day at 6:00 pm each day. APGI adheres to the flow and operation schedule provided by TVA.*

Table 2, below, summarizes other salient characteristics of each development. See Exhibit B, attached, for a table reflecting the generating capacity at each development.

<b>Table 2: Development Name, Reservoir Extent, and Selected Infrastructure Attributes</b>			
<b>Development</b>	<b>Reservoir Acreage</b>	<b>Shoreline Miles</b>	<b>Selected Infrastructure Attributes</b>
Santeetlah	2,881	78.8	Santeetlah dam is 1,054 ft. long and 216 ft. high. Pipelines and tunnels carry Cheoah River water 5 miles to the Santeetlah powerhouse on the Little Tennessee River.
Cheoah	644	19.8	Cheoah dam is 750 ft. long and 229 ft. high. A tunnel carries water 450 feet from one intake to four turbine-generator units, and a penstock carries water 490 feet from a second intake to a fifth turbine-generator unit.
Calderwood	570	17.1	Calderwood dam is 916 ft. long and 230 ft. high. A 2,050 ft. long tunnel carries water from the intake to the powerhouse.
Chilhowee	1,734	26.1	Chilhowee dam is 1,483 ft. long and 88.5 ft. high. A powerhouse integral to the dam is located immediately downstream of the intake.

Highlights of the FERC License Provisions. The project's new license includes a number of requirements intended primarily to restore, protect, and enhance natural resources and improve public access and recreation. The applicant must comply with license requirements to:

- 1) Operate the Santeetlah development to ensure minimum flows to the formerly dewatered bypass section of the Cheoah River below the development, maintain surface elevations to benefit aquatic resources, and provide high flow events to benefit downstream aquatic resources and whitewater recreation, among other operational changes.
- 2) Release continuous minimum flows from Calderwood dam to protect and restore aquatic resources in the previously dewatered bypass reach of the Little Tennessee River, and minimize drawdowns from the Chilhowee Reservoir.
- 3) Protect natural resources and recreation through conservation easements, land transfers, and other enforceable measures.
- 4) Upgrade existing and construct or fund additional recreational infrastructure and amenities,

and expand recreation access to certain project lands.

- 5) Fund up to \$10,000 of fish passage measures for the Chilhowee development in the form of seasonal trapping and relocation of threatened and endangered fish species, and implement a study to evaluate the presence and status of additional migrating riverine and diadromous fish species as the basis for possible future fishway requirements at the development.
- 6) Fund or undertake a series activities to monitor and research natural resources affected by the project, promote threatened and endangered species recovery, and implement outreach and environmental education.
- 7) Consult periodically with stakeholders to assess water reallocation and flows for whitewater recreation in the Cheoah River.

Highlights of Additional Settlement Agreement Provisions. The Settlement Agreement goes beyond the FERC license requirements in reflecting the parties' agreement to carry out a number of other actions relating to protection, restoration, and enhancement of natural resources or recreation. The Settlement Agreement stipulates that the applicant will:

- 1) Establish of two funds, one in Tennessee and one in North Carolina, to underwrite natural resource enhancement and stewardship activities. The applicant is to endow and annually augment the funds under the terms of both the FERC license and Settlement Agreement. The applicant will pay \$4 million and \$1.074 million to the Tennessee and North Carolina funds, respectively, over the license period.
- 2) Fund recreational enhancements at the four impoundments. The applicant's financial contribution will be \$4.6 million over the license period (state and federal agencies must contribute additional funding).
- 3) Convey permanent and term conservation easements and purchase options to land conservancies and public agencies, and also impose restrictive covenants, in order to protect natural resources and public recreation access on project lands. These changes in land ownership and use restrictions, affecting roughly 10,000 acres, will permanently establish contiguous areas of land in conservation management because of the project's central location relative to two National Forests, two Wilderness areas, and Great Smoky Mountain National Park.
- 4) Provide a total of \$400,000 over the license period (to be matched by the State of Tennessee) for recreational fish stocking at Calderwood Reservoir.
- 5) Implement a protocol to guide the consideration, feasibility, and funding of additional high flow events to benefit whitewater recreation in the Cheoah River, beyond those required by the FERC license primarily to benefit fish and wildlife.

A list of the 22 signatories to the Settlement Agreement appears as Exhibit C to this reviewer's report.

Memorandum of Understanding. The parties to the Settlement Agreement finalized the accord in May 2004. FERC issued its license for the project in January 2005. The signers of the Settlement

Agreement developed an MOU to address inconsistencies between the FERC license and elements of the Settlement Agreement. The MOU reflects the signatories' agreement on common interpretations of the Settlement Agreement that would "preserve bargained-for benefits...without imposing unforeseen or unreasonable additional costs and burdens on the Licensee or any other Signatory."

Public comment letters. A July 29, 2005 letter to LIHI from an organization representing local homeowners, "The Friends of Lake Santeetlah," urged LIHI certification of the project, commending both APGI and the parties to the Settlement Agreement for minimizing the project's "impact... on the area." LIHI received no other comment letters.

General conclusions. The resource agency staff and other stakeholders contacted in the course of this review expressed the view that the post-Settlement Agreement/relicensing changes in facility operations and land management will significantly protect, restore, and enhance natural and recreation resources. Every natural resource-related stakeholder contacted credited the applicant with acting in good faith throughout the negotiation of the Settlement Agreement and license and in their implementation of license and Settlement Agreement provisions to date.

Recommendations. Based on my review of information submitted by the applicant, my review of additional documentation, and my consultations with resource agency staff, I believe the Tapoco Hydroelectric Project presently meets all of the mandatory criteria to be certified. Therefore I recommend that the LIHI Governing Board certify the Tapoco Hydroelectric Project.

The applicant is also requesting that the project's LIHI certification be extended by three years, based on its consistency with LIHI's watershed protection criteria D (i.e., 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; or a fund that can achieve the equivalent). Natural resource agency staff confirmed that the applicant has implemented conservation easements required by the Settlement Agreement and license. In my opinion these easements, combined with implementation of the applicant's shoreline management plan, and establishment of the Tennessee and North Carolina funds, will provide protection that meets LIHI's watershed criteria. For this reason, if the Governing Board does certify the project, I also recommend that the Governing Board extend the applicant's certification by an additional three years.

Additional issues for LIHI Governing Board consideration. The Settlement Agreement and FERC license are broad in scope, with many elements to be executed over time. The applicant submitted its application for LIHI certification less than five months after FERC relicensed the project. This raises the general issue that the applicant's record of compliance is very short. For this reason, the LIHI Governing Board may wish to require that the applicant submit annual written compliance reports detailing consistency with provisions of the Settlement Agreement and FERC license. Submittal to LIHI of the applicant's annual compliance reports to FERC would accomplish this goal and not place an undue burden on the applicant.

The timing of the project's relicensing also raises a specific issue related to the formerly dewatered bypass reach of the Little Tennessee River below Calderwood Dam. This reach remains on the State of Tennessee's most recent Clean Water Act (CWA) section 303(d) list of impaired waters due to habitat loss, with the cause described as diversion of flow at the upstream impoundment. However, the state's CWA section 401 certification, also issued April 2005, states that the project will not violate state water quality laws if the applicant complies with the 401 certification's conditions, which include minimum flows to the bypass reach. Furthermore, in an October 19, 2005 letter to LIHI the directors of the Division of Water Pollution Control, Tennessee Department of Environment and Conservation, and the Division of Environmental Services, Tennessee Wildlife Resources Agency stated that they "agree that the Tapoco Project is appropriately protective of water quality in the bypass reach below Calderwood Dam." If the LIHI Governing Board has concerns about the bypass reach appearing on the CWA 303(d) list, it may wish to condition the project's continued LIHI certification on removal of the Calderwood development as the source of impairment of the bypass reach from the next iteration of the State of Tennessee's CWA 303(d) list. (See section B, below, for a more detailed discussion of this issue).

## Low Impact Certification Criteria

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### A. Flows

- 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.**

Under the terms of the project's FERC license and Settlement Agreement, the applicant is required to operate the Santeetlah development in North Carolina to ensure minimum flows to the formerly dewatered bypass section of the Cheoah River below the development, maintain surface elevations to benefit aquatic resources and recreational amenities, and provide high flow events to benefit downstream aquatic resources and whitewater recreation, among other operational changes. The applicant is also required to release continuous minimum flows from Calderwood dam in Tennessee to protect and restore aquatic resources in the formerly dewatered bypass reach of the Little Tennessee River, and minimize drawdowns from the Chilhowee Reservoir (also in Tennessee). Resource agency staff of the respective states said that to the best of their knowledge the applicant is complying with all flow and related operating requirements, which had a September 1, 2005 deadline.

With respect to the required minimum flows to the bypass reach below Calderwood dam, resource agencies set the flow levels to create stream temperatures that match the cool water fishery that is believed to have existed prior to hydropower development in the watershed. The mandated flows are smaller than what are believed to be historic flows. However, as a result of

the basin's hydro development, flows greater than the mandated levels would create conditions for a cold water fishery, which would run counter to the resource agencies' management objectives. Tennessee Department of Environment and Conservation (TDEC) staff commented that the Tapoco Project has the effect of dampening potentially greater adverse effects of the Tennessee Valley Authority's upstream Fontana Dam. Absent the Tapoco Project, the Fontana Dam would be releasing widely fluctuating and very cold tailwaters.

*If YES, go to B.*

**PASS**

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## **B. Water Quality**

### **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**

Officials of TDEC and the North Carolina Department of Environment and Natural Resources (NCDENR) confirmed that to the best of their knowledge, the applicant is in compliance with all requirements of the respective states' Clean Water Act Section 401 water quality certifications. The certifications included requirements that are discussed in the flows, fish passage and protection, watershed protection, and recreation sections of this application review.

*If 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 Act?**

**YES**

The bypass reach of the Little Tennessee River below Calderwood Dam is included on the State of Tennessee's 2004 Clean Water Act Section 303(d) list of impaired waters.<sup>1</sup>

*If YES, go to B3.*

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<sup>1</sup> Tennessee Department of Environment and Conservation. 2005. Final Version Year 2004 303(d) List. <<http://www.state.tn.us/environment/wpc/publications/#303d04>> (Accessed September 22, 2005).

**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**

At the present time, the bypass reach below Calderwood Dam does, in fact, appear on the state's CWA section 303(d) Year 2004 list for "[h]abitat loss due to stream flow alteration" with the cause described as follows: "Upstream Impoundment. Flow is diverted around this section of the Little Tennessee River below Calderwood Reservoir. This stream is Category 5. The stream is impaired for one or more uses."

However, the State of Tennessee's CWA section 401 certification, issued April 2004, states that the project will not violate state water quality laws if the applicant complies with the CWA section 401 certification's conditions, which are incorporated by reference in the project's FERC license. These conditions, which mirror provisions in the Settlement Agreement, include minimum flows to the formerly dewatered bypass reach of the Little Tennessee River below Calderwood dam.

Because the CWA section 303(d) listing predates the applicant's implementation of the CWA section 401 certification requirements, it appears reasonable at this point in time to assume that compliance with the new minimum flows will result in a future determination that the project does not contribute to the violation of the habitat water quality standard for the bypass reach below Calderwood dam. Indeed, in an October 19, 2005 letter to LIHI the directors of the TDEC Division of Water Pollution Control and the Tennessee Wildlife Resources Agency, Division of Environmental Services, stated that they "agree that the Tapoco Project is appropriately protective of water quality in the bypass reach below Calderwood Dam."

If the LIHI Governing Board has concerns about the bypass reach appearing on the CWA 303(d) list, it may wish to condition the project's continued LIHI certification on removal of the Calderwood development as the source of impairment of the bypass reach from the next iteration of the State of Tennessee's CWA 303(d) list.

*If NO, go to C.*

**PASS**

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### C. Fish Passage and Protection

**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**

Consistent with a FERC license article reflecting U.S. Fish and Wildlife Service (FWS) requirements, on August 31, 2005 the applicant submitted a study plan for evaluating the presence and status of diadromous fish (specifically American eel, *Anguilla rostrata*; see below regarding requirements for riverine fish). The plan is to include initial monitoring within 5 years of the effective license date and additional monitoring in years 10 and 20 of the license. If populations are detected at the base of Chilhowee Dam, FWS may require additional fishways, except that FWS may not require structural fishways prior to year 20 of the license.

*If YES, go to C5.*

**5) Is the Facility in Compliance with *Mandatory Fish Passage Prescriptions* for upstream and/or downstream passage of *Riverine* fish?**

**YES**

Consistent with requirements of the FERC license, on August 31, 2005 the applicant filed with FERC a plan for fish passage at the Chilhowee development for four target threatened or endangered fish species: the Spotfin chub (*Erimonax monachus*), Yellowfin madtom (*Noturus flavipinnis*), Smoky madtom (*Noturus baileyi*) and Duskytail darter (*Etheostoma percnurum*). FWS required the seasonal trapping and relocation of these targeted fish species between three tributaries to the Little Tennessee River. Prior to construction of the mainstem Little Tennessee River dams, there were no physical barriers to the movement of these species between the tributaries. The applicant is to consult annually with FWS to determine the quantities of fish to be relocated, and to carry out sampling and other activities. FWS's goal is to achieve genetic mixing between the sub-populations of the four fish species. The applicant is required to provide \$10,000 in funding annually to implement the plan. According to FWS staff, the applicant is prepared to disburse the funds, but the resource management agencies have not yet established a fiscal agent to receive them.

Together with the requirement for the diadromous fish study described under criterion C1, above, FERC included in the project license the FWS requirement that the applicant submit by April 30, 2006 a study plan to evaluate the presence and status of other riverine fish species in the vicinity of the Chilhowee Dam tailrace, including but not limited to Lake sturgeon (*Acipenser fulvescens*), Black buffalo (*Ictiobus niger*), Smallmouth buffalo (*Ictiobus bubalus*), Sauger (*Sander canadense*), and River redhorse (*Moxostoma carinatum*). The plan must include initial monitoring within five years of the effective license date and additional monitoring in years 10 and 20 of the license. If populations of these species are detected at the base of

Chilhowee Dam, FWS may require additional fishways, but no structural fishways will be required prior to year 20 of the license.

If 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?**

**NOT APPLICABLE**

There are no such recommendations.

If NOT APPLICABLE, go to D

**PASS.**

**D. Watershed Protection**

- 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?**
- 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**

State and federal resource agency staff confirmed that APGI had met its commitments under the Settlement Agreement to provide a buffer zone on or in proximity to the shoreline of each impoundment on APGI lands, except for areas in the immediate vicinity of project facilities (dams, powerhouses, transmission facilities, etc.). The table below presents the acreage contained in a 200-foot buffer surrounding each impoundment and the approximate percentages of that area contained either in an APGI conservation easement or conservation ownership

<b>Impoundment</b>	<b>Total Acreage 200 Foot Buffer</b>	<b>APGI Lands in Conservation Easement (approx. %)</b>	<b>National Forest/Park, Other Public Ownership (approx. %)</b>	<b>Total Acres in Conservation Ownership (approx. %)</b>
Santeetlah	1,756	~2%	~76%	~78%
Cheoah	505	~42%	~30%	~72%
Calderwood	412	~30%	~11%	~41%
Chilhowee	631	~23%	~22%	~43%
Total	3,304	~16%	~51%	~67%

Source: APGI

In many areas, the APCI easement does not begin at the shoreline, but slightly landward. However, where there is a “gap” between the shoreline and easement, the area is covered by a license-required Shoreline Management Plan (SMP). The Department of the Interior (DoI), the Forest Service, and the North Carolina Wildlife Resources Commission submitted letters to FERC supporting the Shoreline Management Plan in June 2005. The DoI letter stated that under the plan “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.” Attachment D to this report provides is a map illustrating for Santeetlah Reservoir the extent of the 200-foot buffer, the APCI easement, and public ownership.

The Settlement Agreement provides watershed protection far beyond a 200-foot buffer through land conveyances. The land conveyances involve permanent and term conservation easements and purchase options granted by the applicant to land conservancies and public agencies, as well as imposition of restrictive covenants, in order to protect natural resources and public recreation access. These changes in land ownership and use restrictions, affecting roughly 10,000 acres, will permanently establish a large contiguous area of land in conservation management because of the project’s central location relative to two adjacent National Forests and Wilderness areas (Cherokee and Nantahala National Forests, Citico Creek Wilderness and Joyce Kilmer-Slickrock Creek Wilderness), another nearby National Forest (Pisgah), and the Great Smoky Mountains National Park.

Finally, under the Settlement Agreement the applicant will, over the life of the project license, contribute more than \$6 million to two funds to pay for project mitigation activities and natural resource stewardship in the project’s vicinity (\$4 million to the Tallassee Fund [Tennessee] and \$1.074 million to the North Carolina Resource Management and Enhancement Fund). The funds’ boards are comprised of representatives of the state and federal resource agencies, the Eastern Band of Cherokee Indians and, for the Tennessee fund, a number of nongovernmental organizations. The applicant is ready to make its initial payments to these funds, but is awaiting the public agencies’ formation of a fiscal entity to receive them.

Taken together, the APCI easements, federal land in conservation ownership, Shoreline Management Plan, and establishment of the Tennessee and North Carolina funds appear to more than satisfy LIHI’s watershed criteria.

*If YES, go to E*

**PASS**

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## **E. Threatened and Endangered Species Protection**

### **1) Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?**

**YES**

There are 7 federally listed threatened or endangered species and 3 additional federal species of concern; all of these are included on the list of more than two dozen state-listed imperiled or threatened species found within the project boundary. The federally listed species are the primary focus of the resource management agencies, and these are the Appalachian elktoe (freshwater mussel), Virginia spiraea (shrub), Indiana bat, and the four fish species discussed above in section C5 regarding fish passage: Spotfin chub, Yellowfin madtom, Smoky madtom, and Duskytail darter.

*If 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?**

According to FWS there were some specific objectives in the recovery plans for the federal species noted above that were relevant to the project and guided FWS in its development of recommendations for the FERC license and the Settlement Agreement. However, the recovery plans did not specifically name the project. FWS reports that the applicant is, at present, in compliance with the threatened and endangered species-related provisions of the license and Settlement Agreement and therefore with any recovery plan recommendations reflected in those documents.

There was no evidence of state recovery planning provisions for state listed species either in conversation with wildlife officials or in relicensing or Settlement Agreement documents. State officials stated that several elements of the license and Settlement Agreement would benefit state listed species (in particular, that the projects to be underwritten by the respective state funds were expected to include projects to benefit special status species). State officials are satisfied with the applicant's compliance to date with the license and Settlement Agreement with respect to these provisions.

*If 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 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?**

**NOT APPLICABLE**

*If NOT APPLICABLE, go to E5.*

**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?**

In documents filed with FERC in connection with the relicensing of the project, FWS found that the project would not be likely to adversely affect the Appalachian elktoe, Virginia spiraea, Indiana bat, Spotfin chub, Yellowfin madtom, Smoky madtom, and Duskytail darter, and would have no effect on two other species, the red-cockaded woodpecker and bald eagle, found in the vicinity of the project. There was no information relevant to state listed species.

*If YES, go to F.*

**PASS**

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**F. Cultural Resource Protection**

**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**

Cultural resources at the Tapoco Project consist of the project's civil works, and archaeological sites that date from both Indian tribal habitation and early European settlement periods. Many of the latter two are found along the shoreline or submerged beneath the reservoirs. A programmatic agreement for the management of historic properties is in place, with federal, state, and tribal agencies and historic preservation offices as signatories. The applicant is preparing a Historic Properties Management Plan, required by the FERC license, that is due March 1, 2006.

The Eastern Band of Cherokee Indians (EBCI) Tribal Historic Preservation Officer expressed the concern that the applicant had not consulted with EBCI at a level corresponding to its status as a sovereign government in the course of the overall relicensing and Settlement Agreement processes. He did report a very positive meeting with the applicant's representatives in May 2005 in connection with the applicant's requirement to develop an Historic Properties Management Plan. However, he expressed concern that he had had no further contact from the applicant related to development of the plan, which is due by March 1, 2006.

Staff of both the Tennessee Historical Commission and the North Carolina State Historic Preservation Office confirmed that to their knowledge the applicant has complied to date with all license requirements related to cultural resources. Information is pending from the Forest Service (the federal agency most involved in cultural resource issues connected with the project) and will be provided at the LIHI Governing Board meeting.

*If YES, go to G.*

**PASS**

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## **G. Recreation**

### **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**

Under the terms of the Settlement Agreement and license, the applicant will pay nearly \$1.6 million to upgrade existing and add new recreation facilities at the four reservoirs and along the Cheoah River. The applicant will also contribute \$85,000 annually to operation and maintenance of recreation related facilities, including \$10,000 per year to pay for recreational fish stocking in Calderwood Reservoir. The applicant hosted the first annual recreation planning meeting in July, as required, to prioritize 2005 and 2006 investments.

The applicant is also required to generate high flow events suitable for whitewater recreation as part of mandated flow releases according to an approved schedule. The first two events occurred September 17 and October 1. (It is notable that whitewater recreation interests were not satisfied with the Settlement Agreement and were not signatories because of their desire for additional high flow events. Resource agency staff contacted in the course of this review said that high flow events were intended to first benefit fish and wildlife, with whitewater recreation accommodated to the degree that the events, based on the best scientific information available to the agencies, would not adversely affect fish and wildlife.)

Resource agency staff report that the applicant has complied with all recreation related requirements to date, except that disbursement of funds to the relevant public agencies has not yet occurred because the resource agencies have not yet established a fiscal agent to receive the funds.

*If YES, go to G3.*

**3) Does the Facility allow access to the reservoir and downstream reaches without fees or charges?**

**YES**

The applicant provides access to its recreation facilities at no cost to the public.

*If YES, go to H.*

**PASS**

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**H. Facilities Recommended for Removal**

**1) Is there a Resource Agency Recommendation for removal of the dam associated with the Facility?**

**NO**

There is no recommendation for removal of project facilities.

*If NO the facility passes.*

**PASS**

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**FACILITY IS LOW IMPACT**

## RECORD OF CONTACTS

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Date of Conversation: September 20, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Renee Hoyos, Tennessee Clean Water Network  
Telephone/email: 865/522-7007  
Areas of Expertise: Water quality and quantity, habitat

Ms. Hoyos explained that since the signing of the settlement agreement Tennessee Clean Water Network had not been tracking compliance with the Settlement Agreement (SA) or license. While she wasn't aware of any compliance violations, she recommended speaking with Andrew Fahlund of American Rivers.

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Date of Conversation:  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Dan Eagar, Division of Water Pollution Control, Tennessee Dept. of Environment & Conservation  
Telephone/email: 615/532-0708; dan.eagar@state.tn.us  
Areas of Expertise: Water quality

Mr. Eagar reported that TDEC had not put together a tracking list of compliance requirements for the 401 certification in response to my question on this matter. He suggested contacting the Nature Conservancy and National Parks Conservation Association regarding land conveyance and recreational requirements, respectively. He reported that the Tallassee Fund is in the process of being established; APCI is ready to write the check as soon as the institution is ready to receive funds. Mr. Eagar said that so far as he knew, flow restoration to the Little Tennessee River bypass reach below Calderwood Dam had started, but referred me to David McKinney in the regional office of the Tennessee Wildlife Resources Agency for confirmation. He believes APCI is operating in good faith, and has seen regular reporting from them on operational matters, such as variances for maintenance. With regards to the issue of the 303(d) listing of the Little Tennessee River below Calderwood Dam for impairment due to hydro development, I asked if he believed the restoration of flows warranted the reach's removal from the 303(d) list. He referred me to Greg Denton, TDEC's 303(d) list coordinator for discussion. However, he did say that there is no established basis for assessing whether the level of restored flows is adequate to justify delisting. Resource agencies agreed to the newly mandated flows as part of the overall Settlement Agreement, and set the required levels to create stream temperatures that match the cool water fishery that is believed to have existed prior to hydropower development in the watershed. The mandated flows are smaller than what are believed to be historic flows. However, as a result of the basin's hydro development, increasing flows would create conditions for a cold water fishery, which would be counter to the resource agencies' management objectives. At the same time, he commented that the Tapoco Project has the effect of dampening potentially greater adverse effects of the Tennessee Valley Authority's upstream Fontana Dam. Absent the Tapoco Project, the Fontana Dam would be releasing widely fluctuating and very cold tailwaters.



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Date of Conversation: September 26, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: John Dorney, 401 Certification Coordinator, Water Quality  
Division, North Carolina Department of Environment and Natural  
Resources  
Telephone/email: 919/733-1786; john.dorney@ncmail.net  
Areas of Expertise: Water quality

Mr. Dorney could only report that his database reflected no record of any compliance violations with the 401 certification for the Tapoco project.

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Date of Conversation: September 26, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: David McKinney, Director, Division of Environmental Services,  
Tennessee Wildlife Resources Agency  
Telephone/email: 423/581-7037; dave.mckinney@state.tn.us  
Areas of Expertise: Habitat

Mr. McKinney believes that APCI is committed to fulfilling its commitments under the Tapoco Settlement Agreement and FERC license, and is satisfied that the company is meeting its ongoing obligations to date. He offered as examples the company's reporting on modifications to dam gates for releasing bypass flows below Calderwood Dam, payment of negotiated fees for fish stocking, and readiness to make the initial \$100,000 payment to endow the Tallassee fund called for in the Settlement Agreement. Regarding the issue of whether the flow releases to the bypass reach of the Little Tennessee River below Calderwood Dam are adequate to justify removal of the reach from the state's 303(d) list, he noted that the management goal was to improve the remnant communities of the cool water fishery that existed historically in the Little Tennessee River. Full restoration could not be accomplished absent removal of all hydro development in the basin (i.e., all Tennessee Valley Authority dams). The flows mandated in the Settlement Agreement/License were calibrated to the needs of a cool water fishery. Higher flows would create a cold water fishery suitable for stocking trout. However, in addition to placing a high value on partially restoring the historic habitat values to the reach, the resource agencies do not want to encourage a recreational trout fishery in the area because it is a major wildlife corridor that is already subject to poaching pressure. They believe that encouraging increased public usage could exacerbate the poaching problem. In response to my query about whether he would be willing to write a letter specifically endorsing the flows as appropriately protective of fish and wildlife resources, he said he would be willing to do so in conjunction with Paul Davis, Director of Water Pollution for the Tennessee Department of Environment and Conservation.

Mr. McKinney stressed the importance of the land conveyance elements of the SA/license to achieving regional conservation goals because the APGI lands link the Great Smoky Mountains National Park to the north, the Pisgah and Nantahala National Forests to the east and the Cherokee National Forest to the south. He confirmed that transfer of easements had just been completed. He said his agency had not compiled a list to track compliance with the SA/license.

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Date of Conversation: September 27, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Dwayne Stutzman, Outdoor Recreation Planner, Div. Parks and Recreation, NCDENR  
Telephone/email: 828-296-4500  
Areas of Expertise: Recreation

Mr. Stutzman discussed the recreation improvements sought in the licensing/Settlement Agreement process. He stated that he was satisfied to date with the applicant's compliance.

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Date of Conversation: September 28, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Greg Denton, Manager, Planning and Standards, Div. Water Pollution Control, TN Dept. Env. and Conservation (TDEC)  
Telephone/email: 615-532-0699  
Areas of Expertise: Water Quality, CWA 303(d) List

Mr. Denton said that it was not possible to know at this time whether the habitat improvements that are anticipated to result from the restoration of minimum flows to the bypassed reach below Calderwood dam would be sufficient to remove the reach from the state's 303(d) list. He expressed his view that the requirement to meet state water quality standards is not waived by virtue of compliance with a state Clean Water Act section 401 certification.

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Date of Conversation: September 28, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Chris Goudreau, NC Wildlife Resources Commission  
Telephone/email: 828-652-4360 ext. 223  
Areas of Expertise: Tapoco Natural Resource Issues Generally

Mr. Goudreau confirmed that all deadlines to date had been met (bypass flows, high flow event, 200 foot buffer, land conveyances), or would soon be met (recreational amenities funding), except for fund establishment, which was delayed due to resource agencies' delay in setting up fiscal agent. He underscored positive working developed with relationship with Alcoa through the Settlement Agreement process.

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Date of Conversation: September 28, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Ray Johns, U.S. Forest Service  
Telephone/email: 828-257-4859  
Areas of Expertise: Real Estate Specialist

Mr. Johns stated that Alcoa had complied with everything in the Settlement Agreement to date; conservation easements and other conveyances signed, minimum and high flows released. Administrative barriers on the part of the resource agencies prevented timely receipt of recreational and trust funds, but should be resolved soon.

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Date of Conversation: September 29, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Paul Trianofsky, The Nature Conservancy  
Telephone/email: 423-571-2562  
Areas of Expertise: Land Conveyances

Mr. Trianofsky said that APGI is living up to its obligations, only lag is due to federal agencies in terms of resolving boundary and title issues.

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Date of Conversation: September 29, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Mark Cantrell, US Fish and Wildlife Service  
Telephone/email: 828-258-3939 ext 227  
Areas of Expertise: Fish and Wildlife, Endangered Species

Mr. Cantrell described the reasons behind the fish translocation plan, commented on the fact that North Carolina had never listed the dewatered bypass reach of the Cheoah River below Santeetlah Dam on the state's CWA 303(d) list, confirmed compliance w/required flow regimes, property transfers. He discussed the project lands as a keystone because of their location in the middle of the Cherokee, Nantahala, and Pisgah National Forests, Joyce Kilmer-Slickrock Wilderness, and Great Smoky Mountains National Park, allowing for a continuous forest canopy except for the river.

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Date of Conversation: October 6, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Steve Reed, NCDENR, Div. Water Resources  
Telephone/email: 919-715-5425  
Areas of Expertise: Overall Point Person on Tapoco for NC

Confirmed that in general, applicant is in compliance with all requirements (flows to bypass reach, high flow releases). Discussed issue of annual meetings to evaluate flows; not really adaptive management, because there are sideboards to how much water can be spilled. Said that North Carolina fund will really be the Cheoah River Resource Management & Enhancement Fund, because that is where funds will be targeted (i.e., the nine mile reach below Santeetlah dam). Focus of activities there to be monitoring, addressing habitat fragmentation, reintroduction/enhancement of listed species, gravel reintroduction. Mentioned that in terms of tribal interests, Chilhowee dam area in TN is of greatest interest.

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Date of Conversation: September 26, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Andrew Fahlund,  
Telephone/email: afahlund@americanrivers.org  
Areas of Expertise: Hydro Relicensing

Mr. Fahlund stated his sense that the applicant is being proactive and acting in good faith, and that the resource agencies are paying attention although the applicant is driving implementation.

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Date of Conversation: October 25, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Mark Cantrell  
Telephone/email: Mark\_A\_Cantrell@fws.gov  
Areas of Expertise: Fish and Wildlife, Endangered Species

In response to an emailed question about whether there were endangered species recovery plan recommendations that apply to the project, Mr. Cantrell wrote that there are some specific objectives in the recovery plans that apply to the Tapoco Project, and guided the development of FWS recommendations, although his sense was that the project was not named in the plans.

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Date of Conversation: October 25, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Joe Garrison, Review and Compliance, Tennessee Historical Commission  
Telephone/email: 615-532-1550 x 103  
Areas of Expertise: Cultural Resources

Mr. Garrison stated that the applicant was very responsive and had followed through on all commitments to date. He referred me to his counterparts with the Eastern Band of the Cherokee Indians, the North Carolina State Historic Preservation Office, and the person he said was the remaining federal point person on cultural resources for Tapoco, Rodney Snedeker at the Daniel Boone National Forest.

Date of Conversation: October 25, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Russell Townsend, Tribal Historic Preservation Office, Eastern  
Band of Cherokee Indians (EBCI)  
Telephone/email: 828-488-0237  
Areas of Expertise: Cultural Resources

Mr. Townsend expressed disappointment with the applicant's treatment of EBCI as a narrow stakeholder group rather than a sovereign; consultation was not timely or frequent enough in the pre-Settlement Agreement/licensing phase. In May 2005 he had one very good meeting with the applicant's consultant regarding cultural resources, but he has not been contacted since and the Historical Properties Management Plan required under the license is due March 1, 2006.

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Date of Conversation: October 26-27, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Bob Smet, Tony Plizga, APGI  
Telephone/email:  
Areas of Expertise: Tapoco Project

In email exchanges and telephone conversations, Mr. Smet and Mr. Plizga clarified the situation of project conservation easements as they relate to the LIHI watershed protection criteria. Mr. Plizga provided a map illustrating the fact that in many areas the buffer established by the applicant starts some feet landward of the shoreline. Mr. Smet clarified that the "gap" between the easement and the shoreline is covered by an approved Shoreline Management Plan required by the license.

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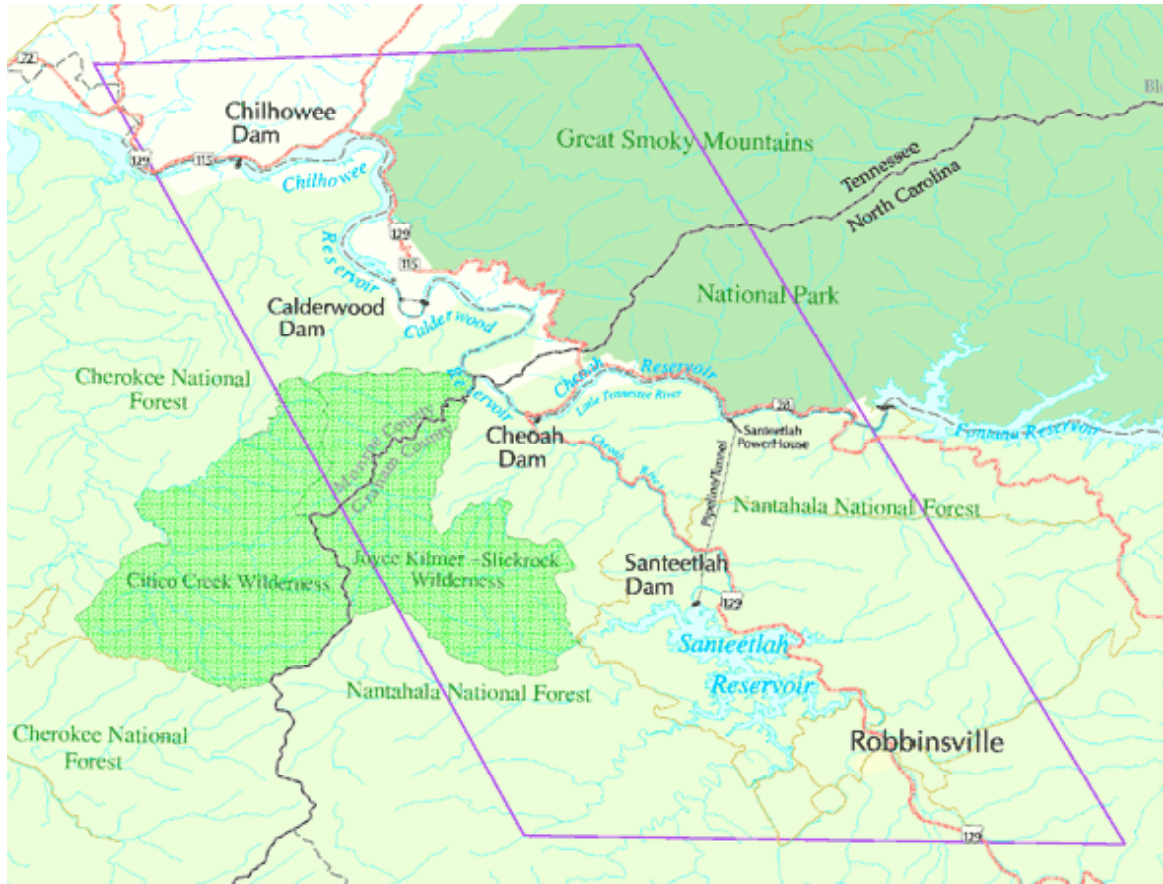
Date of Conversation: October 27, 2005  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Renee Gledhill-Early, North Carolina State Historic Preservation  
Office  
Telephone/email: 919-733-4763  
Areas of Expertise: Cultural Resources

Ms. Gledhill-Early confirmed that her office had signed the programmatic agreement on cultural resources and was working on a Historic Properties Management Plan with the applicant. She gave them "a gold star" for compliance with their requirements.

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## Exhibit A

### Tapoco Project Map



Source: Alcoa Power Generating, Inc. application to the Low Impact Hydropower Institute submitted July 22, 2005

## Exhibit B

### SUMMARY OF GENERATING CAPACITY OF TAPOCO PROJECT DEVELOPMENTS

Note: the notation "Attachment 3" pertains to the APGI document from which this chart was excerpted.

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
<b>Total Santeelah</b>	<b>40.0</b>	<b>49.2</b>	<b>47.0</b>	
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
<b>Total Cheoah</b>	<b>118.0</b>	<b>118.0</b>	<b>144.7</b>	
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
<b>Total Calderwood</b>	<b>117.0</b>	<b>140.4</b>	<b>140.4</b>	
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
<b>Total Chilhowee</b>	<b>51.0</b>	<b>52.2</b>	<b>48.0</b>	
<b>Total Tapoco</b>	<b>326.0</b>	<b>359.8</b>	<b>380.1</b>	

## **Exhibit C**

# **SIGNATORIES TO THE TAPOCO SETTLEMENT AGREEMENT**

American Rivers  
APGI, Tapoco Division  
Blount County  
City of Alcoa  
City of Maryville  
Cross Creek Property Owners Association  
Friends of Lake Santeetlah  
Graham County  
National Park Service  
National Parks Conservation Association  
NC Department of Environment and Natural Resources  
NC Wildlife Resources Commission  
The Nature Conservancy of TN  
TN Clean Water Network  
TN Department of Environment and Conservation  
TN Wildlife Resources Agency  
Town of Lake Santeetlah  
Town of Robbinsville  
US Bureau of Indian Affairs  
US Fish and Wildlife Service  
US Forest Service  
Western NC Alliance



## Exhibit D

### SANTEETLAH RESERVOIR SHORELINE PROTECTION

