

5. Classification

Ownership of Property (Check as many boxes as apply) Category of Property (Check only one box)

- | | |
|---|--|
| <input checked="" type="checkbox"/> private | <input type="checkbox"/> building(s) |
| <input type="checkbox"/> public-local | <input checked="" type="checkbox"/> district |
| <input type="checkbox"/> public-State | <input type="checkbox"/> site |
| <input type="checkbox"/> public-Federal | <input type="checkbox"/> structure |
| | <input type="checkbox"/> object |

Number of Resources within Property
(Do not include previously listed resources in the count).

Contributing	Noncontributing	
<u>2</u>	<u>0</u>	buildings
<u>0</u>	<u>0</u>	sites
<u>0</u>	<u>0</u>	structures
<u>0</u>	<u>0</u>	objects
<u>2</u>	<u>0</u>	Total

Number of contributing resources previously listed in the National Register 0

Name of related multiple property listing (Enter "N/A" if property is not part of a multiple property listing.)

Historic Resources of the Tapoco Hydroelectric Project

6. Function or Use

Historic Functions (Enter categories from instructions)

- | | |
|----------------------------|------------------------|
| <u>INDUSTRY/PROCESSING</u> | <u>Energy facility</u> |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Current Functions (Enter categories from instructions)

- | | |
|----------------------------|------------------------|
| <u>INDUSTRY/PROCESSING</u> | <u>Energy Facility</u> |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

7. Description

Architectural Classification (Enter categories from instructions)

- OTHER/Functional
- _____
- _____

Materials (Enter categories from instructions)

- | | |
|-------------------|-----------------------------|
| foundation | <u>CONCRETE</u> |
| roof | <u>METAL/Aluminum</u> |
| walls | <u>METAL/Aluminum/Steel</u> |
| other | _____ |

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

- X A Property is associated with events that have made a significant contribution to the broad patterns of our history.
B Property is associated with the lives of persons significant in our past.
C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
D Property has yielded, or is likely to yield information important in prehistory or history.

Areas of Significance

(Enter categories from instructions)

INDUSTRY

Period of Significance

circa 1955- 1957

Significant Dates

1957

Significant Person

(Complete if Criterion B is marked above)

N/A

Cultural Affiliation

N/A

Architect/Builder

BUILDER: Power & Engineering Group of Alcoa, Pittsburgh, PA

Criteria Considerations

(Mark "X" in all the boxes that apply.)

- A owned by a religious institution or used for religious purposes.
B removed from its original location.
C a birthplace or a grave.
D a cemetery.
E a reconstructed building, object, or structure.
F a commemorative property.
X G less than 50 years of age or achieved significance within the past 50 years.

Narrative Statement of Significance

(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

- Previous documentation on file (NPS) NA
preliminary determination of individual listing (36 CFR 67) has been requested.
previously listed in the National Register
previously determined eligible by the National Register
designated a National Historic Landmark
recorded by Historic American Buildings Survey #
recorded by Historic American Engineering Record #

Primary Location of Additional Data

- X State Historic Preservation Office
Other State agency
Federal agency
Local government
University
Other

Name of repository: Tennessee Historical Commission/North Carolina Department of Historic Resources

10. Geographical Data

Acreage of Property 21.5 acres Tallassee

UTM References

(Place additional UTM references on a continuation sheet)

Zone Easting Northing Zone Easting Northing

1 17-767349-3937801 2 17-767524-3937793

3 17-767445-3937333 4 17-767277-3937353

 See continuation sheet.

Verbal Boundary Description

(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification

(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Philip Thomason/Teresa Douglass

organization Thomason and Associates date October 14, 2003

street & number P.O. Box 121225 telephone (615) 385-4960

city or town Nashville state TN zip code 37212

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items

(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name Norman Pierson/Alcoa Power Generating Inc. Tapoco Division

street & number 300 North Hall Road telephone 865-977-3321

city or town Alcoa state TN zip code 37701-2516

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**Chilhowee Hydroelectric Development
Blount and Monroe Counties, Tennessee**

SUMMARY DESCRIPTION

The Chilhowee Hydroelectric Development is located in Blount and Monroe counties, Tennessee, on the Little Tennessee River. The last of the four Tapoco hydroelectric systems built, the Chilhowee development was constructed between 1955 and 1957. Construction began on the Chilhowee development in July of 1955, and the system began operations in August of 1957. The Chilhowee Dam is located approximately nine miles below the Calderwood Powerhouse and it is 91 feet in height and 1483 feet in length. It is a concrete gravity dam with rock fill abutments, and six tainter gates. The associated reservoir has a normal capacity of 1747 acres.

Aluminum was widely used in the construction of the Chilhowee development, most notably in the powerhouse, which has a design of aluminum panels over steel frame. Aluminum was also used in the building's interior siding and roof deck. Aluminum was also the selected material for numerous other details of the development, including gates, railings, fences, ventilators, hatch covers, doors, and a variety of electrical elements such as junction boxes and generator buses. It is estimated that 137 tons of aluminum were used to construct the Chilhowee project.¹ Since 1957, the Chilhowee Dam and Powerhouse have been an integral part of providing hydroelectric power to Alcoa.

INDIVIDUAL PROPERTY DESCRIPTIONS

- CB = Contributing Building
- CS = Contributing Structure
- NCB = Non-contributing Building
- NCS = Non-contributing Structure

Dam, 1957 (CS)

The Chilhowee Dam is a concrete gravity intake and spillway design with rock fill abutments. It is 91 feet in height and 1,483 feet in length. The spillway has six tainter gates and ogee crests. The tainter gates are operated by individual drive mechanisms mounted below the deck of the dam. Control cabinets for the gate motors are on top of the deck. The associated reservoir contains approximately 1,734 acres and has an elevation of 874 feet. Its drainage area is 1,977 square miles. On top of the dam are a concrete surface roadbed, and a concrete railing with a steel balustrade. On top of the dam is a crane that runs on a steel track system. This crane revolves 360 degrees to clear debris and raise and lower the draft tube gates. It has a cab with original two-light steel and glass doors, and six-light steel hinged windows, and an enclosed glass operator's compartment. To the south of the dam is a steel water tank for fire protection.

Powerhouse, 1957 (CB)

The Chilhowee Powerhouse is integral with the dam. It is located downstream of the intake between the gate controlled spillway and the south non-overflow section. The Chilhowee Powerhouse is constructed of aluminum panels over a steel frame with a concrete substructure. Aluminum was also used for the interior siding and roof deck of the building as well as for a variety of railings, hatch covers, fencing, doors, and other items on the facility. The powerhouse contains three Kaplan turbine units, a type of propeller turbine that was introduced in the United States in 1929. The units have a total capacity of 50 MW, and the total station hydraulic capacity is 14,000 cfs. The Chilhowee facility operates as a daily cycle, peaking facility and uses flow delivered from Tapoco's Calderwood Reservoir.

The powerhouse has a poured concrete foundation, corrugated aluminum walls and ceilings. On the south facade of the powerhouse are an equipment entrance with an overhead roll-up aluminum door, and a pedestrian entrance with an original steel door. The north facade lacks fenestration, and the west facade has two rectangular louvered vents. The lower level of the west facade has a concrete deck over the river, which is enclosed with a chain link fence. The interior has a tile floor and the west, north, and south walls are of corrugated aluminum. On the east wall is a surface of poured concrete.

¹Tapoco, Inc., "Tapoco's Hydroelectric Developments in the Smoky Mountains," 14-16.

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Chilhowee Hydroelectric Development
Blount and Monroe Counties, Tennessee

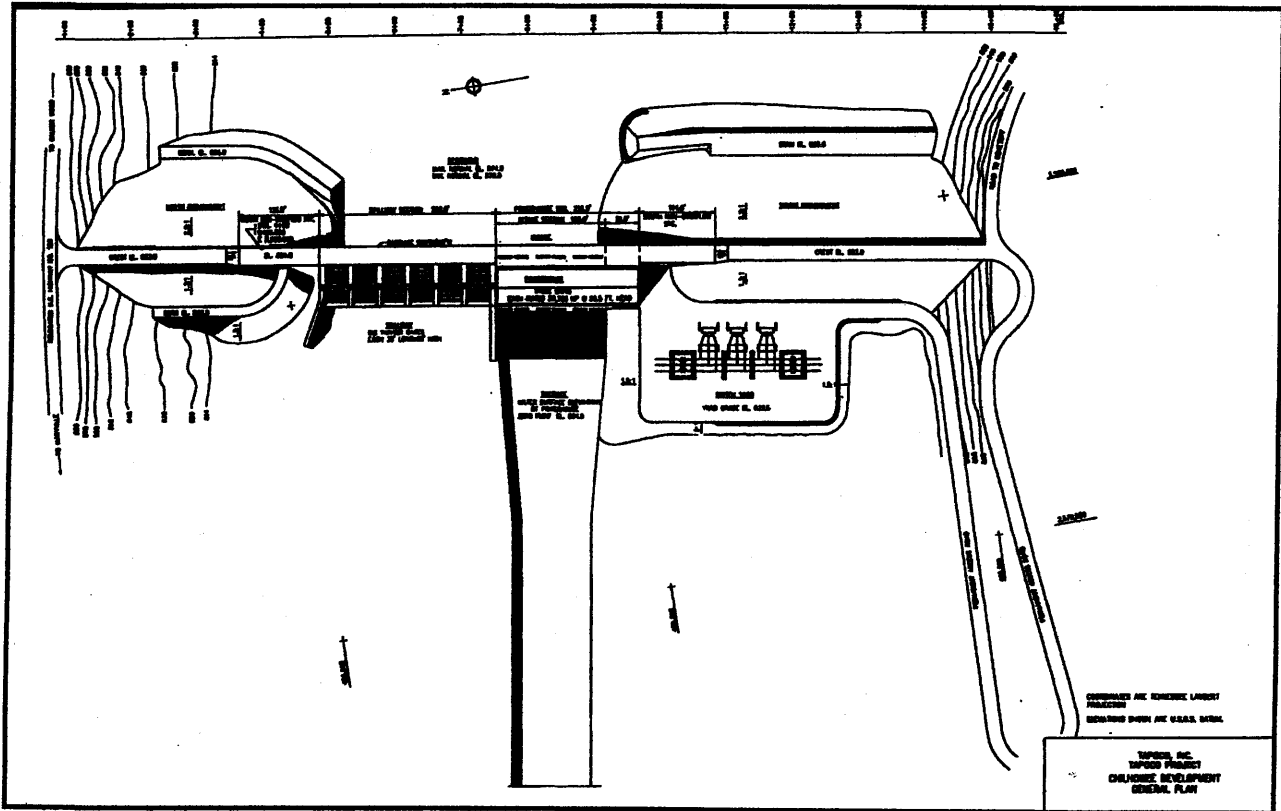


Figure No. 1. General plan of the Chilhowee Hydroelectric Development.

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Chilhowee Hydroelectric Development
Blount and Monroe Counties, Tennessee

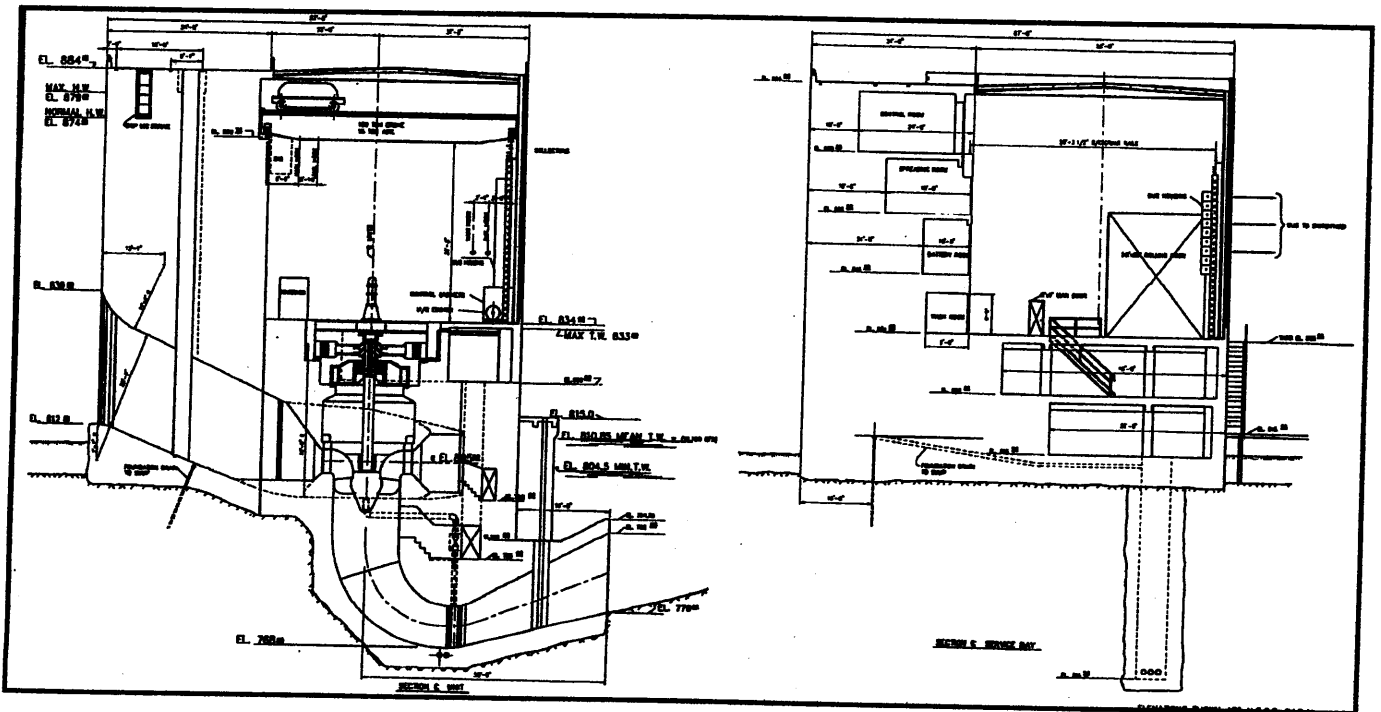


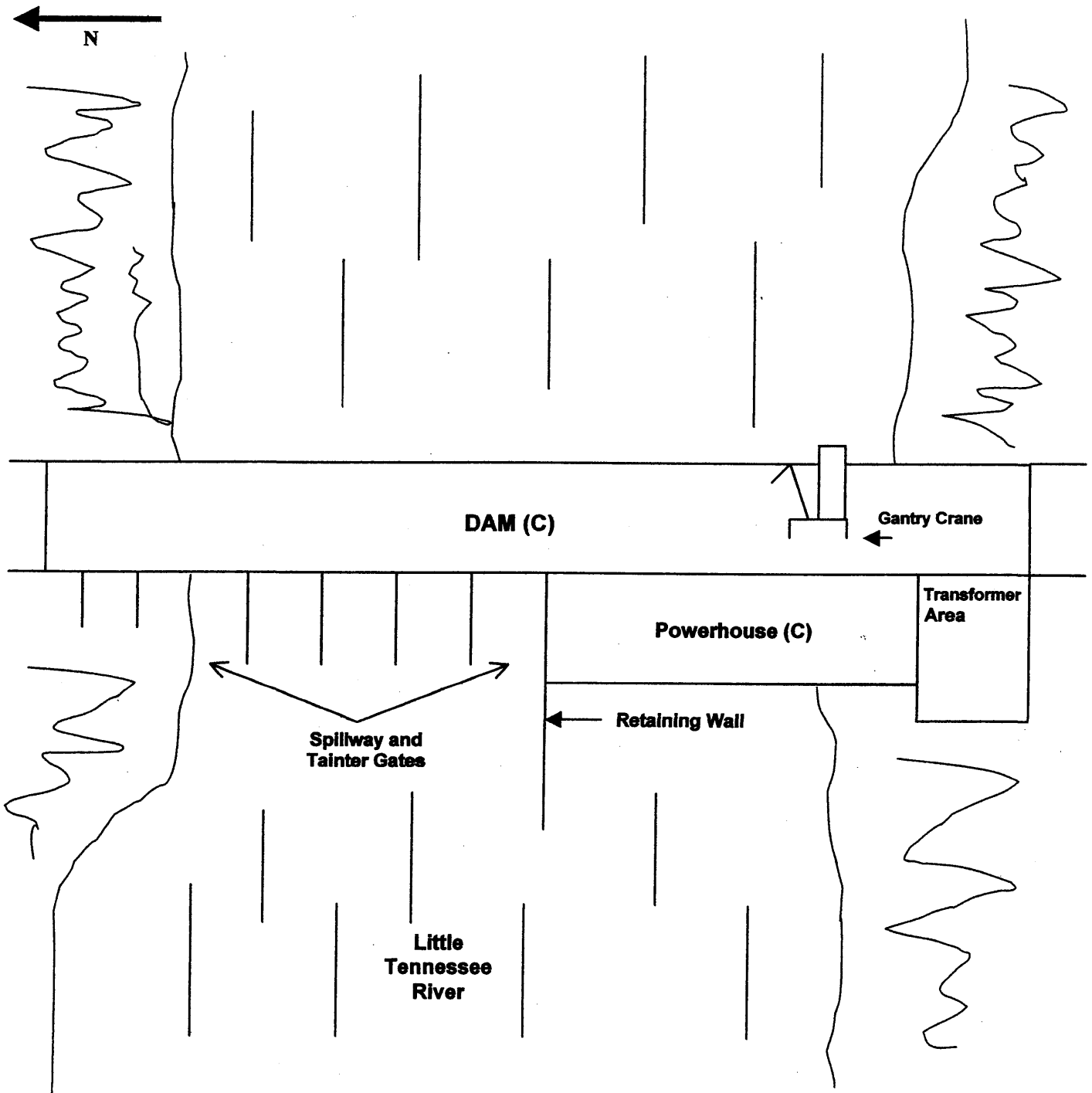
Figure No. 2. Cross-section of the Chilhowee Powerhouse.

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Chilhowee Hydroelectric Development
Blount and Monroe Counties, Tennessee



Map No. 1. Site Plan for the Chilhowee Hydroelectric Development. (not to scale)

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Chilhowee Hydroelectric Development
Blount and Monroe Counties, Tennessee

STATEMENT OF SIGNIFICANCE

SUMMARY STATEMENT

The Chilhowee Hydroelectric Development meets National Register criteria A for its historical significance as an integral part of the Tapoco Hydroelectric Project. The Chilhowee Hydroelectric Development is significant in the industrial development of Tennessee. By the mid-20th century, Alcoa emerged as one of the leading manufacturers in the state, and the development of the Alcoa facility in Blount County made this region an industrial center. Alcoa employed thousands of workers in its aluminum plants, and its hydroelectric facilities made this production possible. Although construction of the Chilhowee Development did not begin until 1955, the facility was planned in the late 1940s/early 1950s as part of Alcoa's interconnected series of hydroelectric facilities on the Little Tennessee and Cheoah Rivers. The Tapoco Hydroelectric Project supplies power to Alcoa industrial plants, and Alcoa continues to be a leader in the aluminum industry, and one of the region's largest employers. The mountainous landscape surrounding Chilhowee retains its sense of time and place and looks much as it did when the facility was completed. There is no substantial residential or commercial development in the vicinity of the dam and powerhouse, or along the reservoir shoreline. The Chilhowee Hydroelectric Development meets the registration requirements set forth in the Multiple Property Documentation Form, Historic Resources of the Tapoco Hydroelectric Project.

HISTORICAL BACKGROUND

The construction of hydroelectric plants in the early 19th century in eastern Tennessee and western North Carolina played a significant role in the development of industry throughout the region. The two states became leading producers of hydroelectric power in the country as the aluminum manufacturer Alcoa developed an integrated system of hydroelectric facilities along the Little Tennessee River. Industry in the region increased as a result of the newly available power.

The Chilhowee Hydroelectric Development is one of four hydroelectric facilities that make up the Tapoco Hydroelectric Project of western North Carolina and eastern Tennessee. Tapoco is a division of Alcoa Power Generating Inc. (APGI). APGI is a subsidiary of Alcoa Inc., which is one of the foremost aluminum manufacturers. Charles Martin Hall founded the company in 1888 as The Pittsburgh Reduction Company, and by 1890, the company was producing around 475 pounds of aluminum per day. The company experienced rapid success and growth in the late 19th and early 20th centuries as markets for aluminum increased dramatically.² The metal was used for a variety of products including kitchen utensils, medical and surgical instruments, foils, bottle caps, military implements, wire baskets and brushes, automobiles, and eventually airplanes.

Early in its history, Alcoa implemented a strategy of vertical integration and self-sufficiency, which included a policy of expanding its manufacturing facilities and taking greater control of the raw materials and energy its product required. Aluminum production requires the raw materials alumina, cryolite, and carbon, as well as vast amounts of electricity. Rather than purchase these materials, the company saw that it was in their best interest to produce them. Control of these basic ingredients enabled the company to prevent inflated costs and lessen potential technical problems.³

The process of making aluminum required extraordinary amounts of electrical power, and so the company sought out the least expensive methods for its production. The search for inexpensive electricity led the company to hydroelectric power, and it became actively engaged in developing its own hydroelectric sites and building and managing its own power plants. It also became important

²Charles Carr, *Alcoa: An American Enterprise* (New York: Rinehart & Company, Inc., 1952), 24, 42-43; 125.

³Ibid., 94-95.

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Blount and Monroe Counties, Tennessee

for the company to locate its aluminum reduction facilities near sources of hydroelectric power. In 1907, the company changed its name to the Aluminum Company of America, or Alcoa, to reflect its role as the industry leader. In 1909, the company focused on the Little Tennessee River and its tributaries in the Great Smoky Mountain region of Tennessee and North Carolina. The area proved to have a large number of favorable dam sites, and the company pursued the location for construction of hydroelectric systems.⁴

In 1913, the company purchased 664 acres north of Maryville, Tennessee, to build an aluminum reduction and fabricating plant. Construction of the plant began in the fall of 1913, and operations began at the new plant, the largest of its kind in the country, on March 6, 1914.⁵ While the new plant was busy producing aluminum, the company's engineers were busy with the design and construction of its own dams and power stations along the Little Tennessee and its tributaries. These hydroelectric developments include Cheoah (North Carolina), Santeetlah (North Carolina), Calderwood, and Chilhowee. The falling water from the dams flows through the penstocks and into the turbines to create electricity. The power then traveled from the powerhouses to the reduction works at Alcoa, Tennessee. Alcoa later formed a subsidiary division of the company to manage its hydroelectric facilities. Named Tapoco, the division reflected the name of the original power company of the region, the Tallassee Power Company.⁶

The general layout of Alcoa's Little Tennessee dam system was finalized in late 1915. The first Alcoa dam and powerhouse to be constructed in the Little Tennessee area was Cheoah, which was completed in April 1919. The Santeetlah facility was completed in 1928, and the Calderwood development began operation in 1930. These developments supplied the Alcoa aluminum plant with electrical power and thus played an important role in the region's industrial development. Alcoa and its power facilities also played a significant role in America's World War II effort as wartime aluminum production increased 500 percent. The metal was used for submarines, aircraft, and other products. In October of 1940, the company began construction of a large sheet mill at Alcoa, Tennessee. This mill was designed to have a monthly capacity of five-million pounds. When it was completed in 1942, this facility, known as the North Plant, was one of the largest industrial buildings ever constructed in the mid-20th century.

In the years following World War II, Alcoa encountered its first major competitors in the aluminum business, mainly Reynolds Aluminum and Kaiser Aluminum. Both companies quickly became fully integrated producers. Alcoa, however, remained the top producer in the industry. In 1950, Alcoa produced 50.86 percent of the market while Reynolds and Kaiser produced 30.94 and 18.20 percent respectively.⁷ As it turned out there was plenty of room for competition as the use of aluminum increased in the postwar years. Many industries were introduced to the metal during World War II and consumption of the product rose as a surplus was available at the war's end.⁸ Following the war, the demand for aluminum dropped, and Alcoa responded by creating a variety of new aluminum products for consumers. A whole new range of aluminum products emerged such as exterior siding materials, windows, doors, and commercial storefronts. Alcoa constructed a new headquarters building in Pittsburgh in 1953 with an exterior of pre-fabricated aluminum panels, and buildings with aluminum facades became widely accepted.

One aspect in which Alcoa differed from its new competitors was its continued involvement in producing its own energy. Other aluminum manufacturers purchased power for their plants from private energy companies. Alcoa continued to own and operate its power

⁴"History Power Developments on Little Tennessee River, 1909-1947," n.p., copy on file at Alcoa archives.

⁵Carr, 94.

⁶J. Elmer Housley, "Brief History of Tapoco and The Great Smoky Country" (Tapoco, NC: Tapoco Lodge, 1957), 1.

⁷Ibid, 240-242.

⁸Ibid, 250-251.

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**Chilhowee Hydroelectric Development
Blount and Monroe Counties, Tennessee**

sources. The company considered electricity as an ingredient in aluminum and regarded the production of power as a long-term cost advantage.⁹ Alcoa continued to build hydroelectric systems, including the construction of the Chilhowee dam and powerhouse on the Little Tennessee River.

In the 1950s, demand for aluminum increased and Alcoa began construction on the Chilhowee development in Blount and Monroe Counties, Tennessee, in July 1955. The system began operations in August 1957. The Chilhowee Dam is located approximately nine miles below the Calderwood powerhouse and it is 91 feet in height and 1,483 feet in length. It is a concrete gravity intake and spillway with rock fill abutments, and six tainter gates provide flood control. The powerhouse is integral with the dam. The associated reservoir has a normal capacity of 1747 acres. Aluminum was widely used in the construction of the Chilhowee development, most notably in the powerhouse, which has a design of aluminum panel over steel frame. Aluminum was also used in the building's interior siding and roof deck. Aluminum was also the selected material for numerous other details of the development, including gates, railings, fences, ventilators, hatch covers, doors, and a variety of electrical elements such as junction boxes and generator buses. It is estimated that 137 tons of aluminum were used to construct the Chilhowee project.¹⁰

Although less than fifty years of age, plans for the Chilhowee Development were formulated during the 1940s as the final extension of the Tapoco facilities on the Little Tennessee River. Because of the interdependence and overall interconnection of the Tapoco hydroelectric complex, the Chilhowee Dam and Powerhouse are significant contributing elements to the character of the Tapoco Hydroelectric Project.

With the completion of the Chilhowee Dam and Powerhouse, Alcoa's construction of hydroelectric facilities on the Little Tennessee River came to an end. Today, Alcoa continues to be a leader in the aluminum industry and operates numerous concerns nationwide. Its hydroelectric developments in Tennessee and North Carolina continue to fuel its major regional plants and work in conjunction with the Tennessee Valley Authority. Alcoa continues to be America's largest manufacturer of aluminum, and its operations in Blount County, Tennessee, employ over 2,000 workers.

Additional information is located in the accompanying Multiple Property Documentation Form, "Historic Resources of the Tapoco Hydroelectric Project."

⁹Ibid, 254-255.

¹⁰Tapoco, Inc., "Tapoco's Hydroelectric Developments in the Smoky Mountains," 14-16.

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Blount and Monroe Counties, Tennessee

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**Chilhowee Hydroelectric Development
Blount and Monroe Counties, Tennessee**

VERBAL BOUNDARY DESCRIPTION

The boundary for the Chilhowee Hydroelectric Development is illustrated as the dotted line on the accompanying Blount County tax map 157. This tax map is drawn at a scale of 1" = 1,000' (reduced scale of 1" = 400'). The boundary includes approximately 21.5 acres in both Blount and Monroe Counties, Tennessee. The property is bounded on the east and west by the footprint of the Chilhowee Dam. The property is bounded on the south by an imaginary line, which is approximately 20' south of the southern face of the Chilhowee Dam. The northern boundary of the property runs along the southern right-of-way of State Route 72 (US 129).

VERBAL BOUNDARY JUSTIFICATION

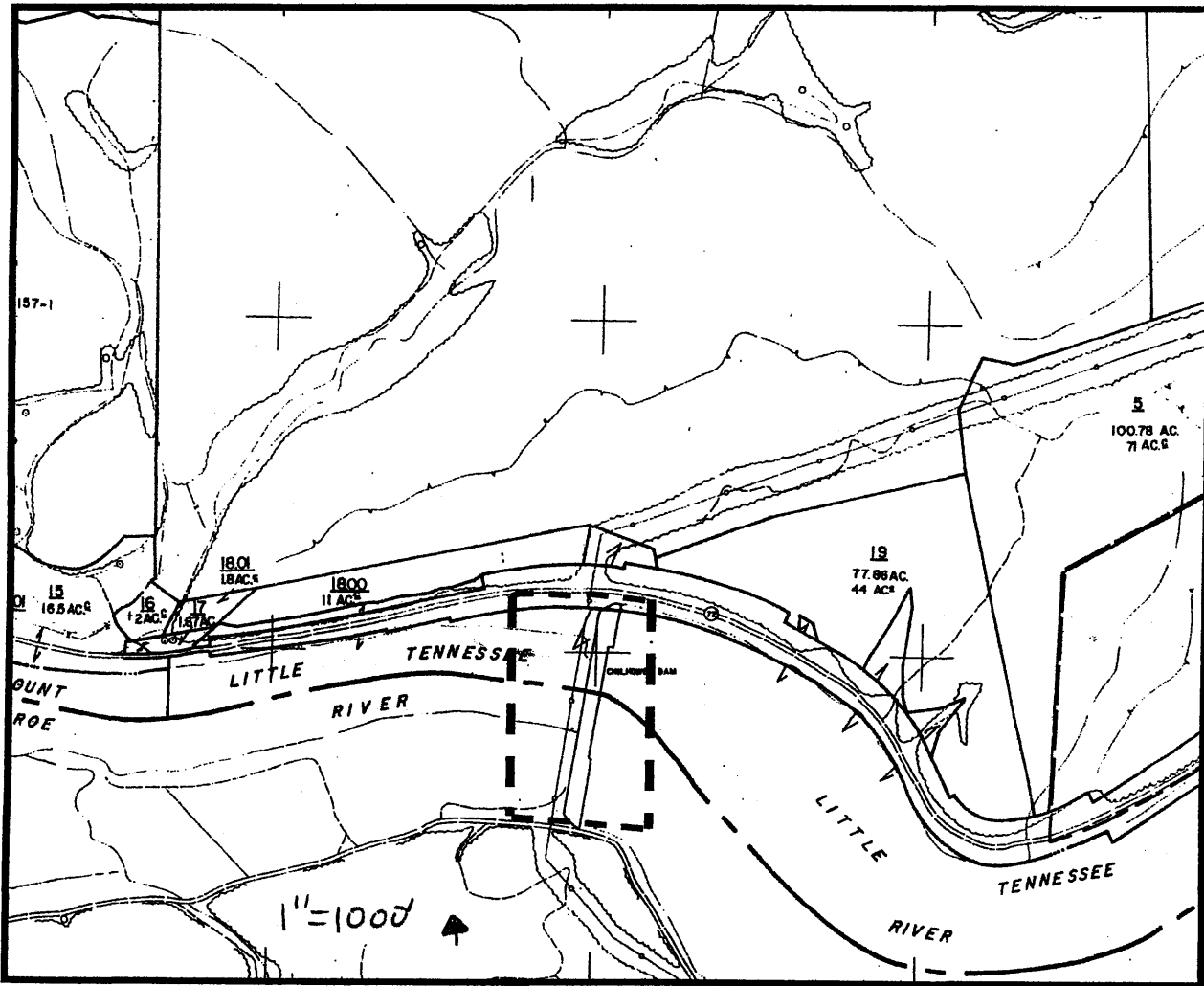
The boundary for the Chilhowee Hydroelectric Development is a rectangular parcel, which includes the entire dam and powerhouse development in Monroe and Blount Counties, Tennessee. The boundary is drawn to include the dam and powerhouse and their immediate environs, which comprise the development. No other buildings or structures are associated with the property and the boundary includes all of the property, which has been historically associated with the Chilhowee Hydroelectric Development.

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Chilhowee Hydroelectric Development
Blount and Monroe Counties, Tennessee



Map No. 2. Recommended National Register Boundary for the Chilhowee Hydroelectric Development
(Tax Map #157 for Blount County, Tennessee).

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**Chilhowee Hydroelectric Development
Blount and Monroe Counties, Tennessee**

PHOTOGRAPHS

Chilhowee Hydroelectric Development

Blount County, Tennessee

Monroe County, Tennessee

Photos by: Thomason and Associates

Date: September-December, 2001

Location of Negatives: Tennessee Historical Commission

Photo No. 1 of 8: Chilhowee Dam and Powerhouse, view to the southeast.

Photo No. 2 of 8: Chilhowee Dam, view to the northeast.

Photo No. 3 of 8: Chilhowee Dam and Powerhouse, view to the north.

Photo No. 4 of 8: Chilhowee Dam, view to the north.

Photo No. 5 of 8: Chilhowee Dam Crane, view to the south.

Photo No. 6 of 8: Chilhowee Powerhouse, west facade, view to the northeast.

Photo No. 7 of 8: Chilhowee Powerhouse, south facade, view to the north.

Photo No. 8 of 8: Chilhowee Powerhouse, interior view.