NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICE
Office of Archives and History
Department of Natural and Cultural Resources

NATIONAL REGISTER OF HISTORIC PLACES

Apalachia Hydroelectric Project

Murphy, Cherokee County, CE0232, Listed 10/26/2017
MPS: Historic Resources of the Tennessee Valley Authority Hydroelectric System, 1933-1979
Nomination by Thomason and Associates
Photographs by Thomason and Associates, June 2015

South side of Apalachia Dam

Powerhouse exterior, west elevation

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

1. Name of Property

Historic name: Apalachia Hydroelectric Project

Other names/site number: Apalachia Dam

Name of related multiple property listing: Historic Resources of the Tennessee Valley Authority Hydroelectric Project, 1933-1979

2. Location

Street & Number: Apalachia Dam Road

City or town: Murphy State: North Carolina County: Cherokee

Not For Publication: N/A Vicinity: N/A Zip: 28906

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this **X** nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property **X** meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

[X] **national** [X] **statewide** [X] **local**

Applicable National Register Criteria: [X] **A** [ ] **B** [X] **C** [ ] **D**

Signature of certifying official/Title: **Date**

Deputy State Historic Preservation Officer, Tennessee Historical Commission

State or Federal agency/bureau or Tribal Government

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of Commenting Official: **Date**

Title: **State of Federal agency/bureau or Tribal Government**

Apalachia Hydroelectric Project | Cherokee County, NC
Name of Property | County and State

4. National Park Service Certification

I hereby certify that this property is:

___ entered in the National Register
___ determined eligible for the National Register
___ determined not eligible for the National Register
___ removed from the National Register
___ other (explain:) _____

_____
Signature of the Keeper Date of Action

5. Classification

Ownership of Property
(Check as many boxes as apply.)

Private	☐
Public – Local	☐
Public – State	☐
Public – Federal	☒

Category of Property
(Check only **one** box.)

Building(s)	☐
District	☒
Site	☐
Structure	☐
Object	☐

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

Contributing	Noncontributing	
3	1	buildings
0	0	sites
4	1	structures
0	0	objects
7	2	Total

Number of contributing resources previously listed in the National Register 1

Apalachia Hydroelectric Project | Cherokee County, NC
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6. Function or Use

Historic Functions (Enter categories from instructions)	Current Functions (Enter categories from instructions)
INDUSTRY/PROCESSING/EXTRACTION/ Energy Facility	INDUSTRY/PROCESSING/EXTRACTION/Energy Facility
RECREATION AND CULTURE/Outdoor Recreation	RECREATION AND CULTURE/Outdoor Recreation
TRANSPORTATION/Rail-Related	TRANSPORTATION/Rail-Related

7. Description

Architectural Classification
(Enter categories from instructions.)
MODERN MOVEMENT: Streamlined Moderne
OTHER: Hydroelectric Dam

Materials: (enter categories from instructions.)
Principal exterior materials of the property: CONCRETE; STEEL; GLASS; ROCK; EARTH; PORCELAIN

Narrative Description

The Apalachia Hydroelectric Project was constructed from 1941-1943 by the Tennessee Valley Authority (TVA). It is located at mile sixty-six on the Hiwassee River, 9.8 miles downstream from the Hiwassee Hydroelectric Project. The powerhouse is located twelve and two-tenths of a mile downstream from the dam at mile fifty-three on the river. The project site is fifteen miles northwest of Murphy, (population 1,627 in 2010) North Carolina. The Apalachia Dam is located in Cherokee County, North Carolina, and the pipeline from the dam connects with the powerhouse which is in Polk County, Tennessee. The Apalachia project impounds the Apalachia Reservoir (also called Apalachia Lake) in North Carolina, which extends from the head of the Apalachia pool to the tail of Hiwassee Dam and has a drainage area of 1,018 square miles. The reservoir has a flood-storage capacity of 35,730 acre-feet. The Apalachia Reservoir has thirty-one miles of shoreline and 1,070 acres of water surface in Cherokee County. The primary purpose for construction of the dam was to improve flood storage and power development in anticipation of World War II.[1]

[1] "Apalachia Reservoir," at webpage http://www.tva.gov/sites/apalachia.htm accessed August 13, 2015.

INVENTORY

The Apalachia Hydroelectric Project originally consisted of the concrete dam across the Hiwassee River, and a powerhouse, pipeline, surge tank, valve house, penstock, and switchyard on the right bank the river. The concrete dam is located approximately twelve miles upstream from the powerhouse. Due to the remote location of the project, the TVA did not build a visitor's building or public recreational facilities. Maintenance of the project is served by the staff at the Hiwassee Hydroelectric Project location.

1. Apalachia Dam, 1943 (Contributing Structure)

The Apalachia Dam (s*ee Photos 1-3*) is a concrete gravity, non-overflow dam and spillway measuring 1,308 feet in total length.[2] The concrete gravity crest measures 809 feet in length. Its maximum height is 150 feet. Its top level is at elevation 1,282 feet above sea level and designed to divert water efficiently to the power conduit, or pipeline. The dam length provides for ten radial gates measuring twenty-three feet high and thirty-two feet wide, divided by piers six feet thick. The spillway has an ogee-type overfall section. The piers dividing the gates rise twenty-eight feet above the crest to an operating deck which is twenty-one feet in width. There are four, thirty inch wide-flange beam stringers for sliding the steel gates.[3]

The overflow spillway of the dam is located in the natural river channel with non-overflow sections extending from the spillway to the abutments at each side. The spillway is designed to discharge 150,000 cubic feet per second. Attached to the spillway is a conduit, or pipeline, which carries diverted water 12.2 miles above- and below-ground to the surge tank, penstocks and powerhouse. There is a bucket type apron immediately at the downstream end of the spillway.[4]

The intake is a located between block twenty-six and block twenty-seven of the non-overflow dam left abutment. The intake is controlled by a wheel-type gate operated by a fixed hoist. The intake has two gate guided piers which project eight feet from the upstream face of the dam. Projecting from these piers is a semicircular form of reinforced concrete beams supporting the trashracks protecting the intake. The trashrack gate is located immediately upstream from the intake gate and contains four gate openings, eight-feet wide and forty-seven feet high.

2. Pipeline, Tunnel, Surge Tank, Valve House, and Penstocks, 1943 (Contributing Structure)

The pipeline, tunnel, surge tank, valve house and penstocks are interconnected and convey the water from the dam to the powerhouse (s*ee Photo 4-8*). Dictated by topography, the conduit, or pipeline, travels 42,706 feet along the left bank of the river. The average flow through the pipeline is 2,600 cubic-feet per second. Extending a length of 900 feet from the dam, the pipeline is a steel penstock eighteen feet in diameter. After 900 feet, the pipeline goes below ground and becomes a tunnel as it extends through the earth to reach the

[2] Commonly, dam design includes a section that permits the overflow of water from the reservoir (the spillway) and other sections that do not allow the passage of water (non-overflow). Together, these sections contribute to the total length of the dam structure that impounds the reservoir. A gravity type dam is one constructed of concrete or stone and uses the sheer weight of the structure to resist the horizontal pressure of the water pushing against it. Gravity dams are designed in sections that are independently stable.
[3] Tennessee Valley Authority, *The Hiwassee Valley Projects, The Apalachia, Ocoee No. 3, Nottely, and Chatuge Projects: A Comprehensive Report on the Planning, Design, Construction, and Initial Operations of the Four Projects, in the Hiwassee Basin, Constructed on an Emergency Basis during World War II*, *Technical Report No. 5 Volume 2*, (Washington, D.C.: U.S. Government Printing Office, 1948), 68-77.
[4] Tennessee Valley Authority, "The Hiwassee Valley Projects," (Knoxville: Tennessee Valley Authority, 1948), 73-74.

surge tank. The sixteen-foot diameter tunnel is concrete lined to withstand the hydraulic pressure.[5] Construction of the tunnel used 210,543 cubic-yards of concrete and the steel pipeline was manufactured by the Chicago Bridge and Iron Company.[6]

The pipeline extends to the surge tank located on the top of the ridge east of the powerhouse. The surge tank is designed to carry the full rejection load of either both tunnels at one time, or one at a time. The surge tank is a below-ground, differential type tank, concrete lined and sixty-six feet in diameter with a steel riser on center sixteen feet in diameter. The riser is supported by eight brackets spaced uniformly around the pipe. The bottom of the tank is concrete lined two inches thick.[7] Located between the surge tank and the penstocks, is a valve house. The valve house is a concrete structure containing two, twelve-foot diameter butterfly valves, which control the water flow to the lower penstocks at the powerhouse. Each butterfly valve, one situated at each penstock, is located approximately 300 feet above the powerhouse. Each valve is powered by a twenty-horsepower, 250-volt direct current motor. Inside dimensions of the valve house are seventy-four feet in length, twenty feet in width and twenty-three feet in height. The structure is accessed by a concrete and steel staircase down the hill and a steel footbridge connected to the powerhouse.[8]

Connecting the valve house with the powerhouse are the two steel penstocks. These welded steel plate construction penstocks have an internal diameter of eleven feet sloping down thirty-one feet to the valve house. The penstocks then turn downstream fifty-five feet to the powerhouse with the use of steel elbow brackets connecting the sloping section of the continuing penstocks, now at nine-feet in diameter. The elbow brackets are anchored into concrete anchor blocks, while the steel pipes are anchored by steel ring supports. Once reaching the ground elevation of the powerhouse, the penstocks continue underground beneath the railroad and into the powerhouse substructure to the turbines.[9]

3. Powerhouse, 1943 (Contributing Building)

The powerhouse (*see Photo 9-21*) is a two-story building of steel and poured concrete construction. The building houses the main powerhouse control rooms and generator room. The building consists of the main generator room block and a two-story office wing on the south elevation. All exterior walls are of concrete finished with rough-sawed Indiana limestone.[10] The main (south) elevation has a large service bay door of solid metal with four folding panels, three panels high measuring a total of eighteen feet wide by twenty-four feet high. A pedestrian door panel is located within this service bay door. On the second floor of this elevation is a pair of original steel windows of two fixed light and lower hopper panel design. Above the service bay door are aluminum letters that spell "APALACHIA". The roof is precast concrete slabs supported on steel purlins.

The second floor of the east elevation contains a bank of eight steel frame windows which are original two fixed light and lower hopper panel design. There is also a steel door located on the second floor which provides access to a steel footbridge connected to the staircase which parallels the penstocks. The west elevation has six one-over-one fixed porthole windows located below twenty-two sets of one-over-one awning style steel windows. These windows provide illumination into the generator room. The west

[5] Ibid., 79.
[6] Ibid., 362, 379.
[7] Ibid., 89.
[8] Ibid., 96.
[9] Ibid., 91.
[10] Ibid., 96.

elevation also has concrete stairs for access to the draft tube gates below. There is no fenestration on the north elevation.

Entering the interior from the south elevation is a mezzanine that overlooks the open-plan generator room. This level is the main deck of the powerhouse. This level has a storage bay, machine shop area, and employee facilities including a restroom with an original solid aluminum door with louvers, original marble stalls, glazed tile walls and terrazzo flooring. The floor of the main deck is original glazed ceramic tile, and the interior walls are exposed concrete. The powerhouse is equipped with an overhead 240-ton capacity bridge crane, supported by steel frames. In the office wing a staircase connects with the second floor which contains a battery room, motor generating room, vent fan room, communication room and offices. These spaces have plaster walls, concrete ceilings and terrazzo flooring, except for the office, which has plaster walls and ceilings with linoleum flooring.

The powerhouse has two Baldwin-Southward turbines manufactured from the Baldwin Locomotive Works in Eddystone, Pennsylvania, rated at 53,000HP at 360-foot net head and 225 revolutions per minute. Each of these turbines is connected to a vertical shaft generator with a normal rating of 40,000kva, 13.8 kilovolts, 3 phase, 60 cycles, 225 revolutions per minute and discharge about 2,200 cubic feet per second. Each generator is fully enclosed and air-cooled with water-cooled heat exchangers.[11] Access to the generators is via a concrete enclosed stairwell housing a steel staircase with terrazzo treads and landings. The generator room has poured concrete and glazed tile floors. The control room is located on this level and houses the actuator cabinets and main control unit boards. The first floor also contains the 440 volt switchboard room, air compressor room and water treatment room. These spaces display six-course common bond brick walls. The powerhouse's level below the generator room contains the oil-servicing equipment as well as is the location where the penstocks enter the powerhouse. This level is also constructed with concrete exterior walls and six-course brick interior walls, and concrete floor tiles.

4. Switchyard, Transformer Yard, and Transmission Lines, 1943 (Contributing Structure)

The Apalachia project is located within a transmission system connected to the hydroelectric projects at Ocoee No. 3, Hiwassee, and Chickamauga. The electrical structures at Apalachia consist of a transformer yard to the north of the powerhouse and a switchyard and transmission lines located at the top of the ridge above the powerhouse and adjacent to the surge tank (s*ee Photo 22-24*). The transformer yard north of the powerhouse rests on a concrete foundation and is enclosed behind a rectangular chain link fence. Each generator is connected through a three-phase transformer to the 154kw bus. Since there is no interior access to the powerhouse from the north elevation, an un-tanking hoist system was installed at the transformer yard for moving transformers into position. The transformer yard is rated at 13,800 volts, 36,000-48,000 kilovolt-amperes and self-cooled.[12]

Steel transmission lines convey the power from the transformer yard to the switchyard at the top of the ridge east of the powerhouse. The switchyard is located within a chain link fence enclosure and has a gravel surface. The switchyard measures 216 feet long by ninety-four feet wide and is built of three-foot square latticed columns and girders located thirty-six feet apart creating six bays.[13] The switchyard structure is

[11] Ibid., 105-106.
[12] Ibid., 127.
[13] Ibid., 128.

designed for 9,000 pounds per phase, 6,000 pounds per ground wire for the outgoing lines, 3,000 pounds per conductor and 2,500 pounds per ground wire for the transformer connections.

5-6. Switchyard Oil Purification and Fire Protection Buildings, 1956, 1941 (Contributing Building, Contributing Building)

Located at the north end of the switchyard are two concrete buildings (s*ee Photo 25 & 26*). The building located at the northeast corner of the switchyard is the Oil Purification building. This building is of poured concrete with paired steel access doors on the south elevation. A second building located at the northwest corner of the switchyard is the Fire Protection building. This building is of poured concrete with a single full-width steel access door on the north elevation.

7. Flammable Storage Shed, ca. 1970 (Non-Contributing Building)

To the south of the powerhouse is a ca. 1970 flammable storage building of steel construction. The building has steel walls and a flat steel roof. The south elevation has two steel access doors (s*ee Photo 27*).

8. Knoxville Southern Railroad, 1890 (Contributing Structure)

Within the boundary of the project is the right-of-way of the Knoxville Southern Railroad (now the Tennessee Valley Railroad). This railroad runs along the east side of the powerhouse and is a section of the Knoxville Southern Railroad Historic District listed in the National Register in February of 2007. The Knoxville Southern Railroad Historic District runs through the Hiwassee River gorge and extends from the railroad bridge at Reliance, Tennessee, to just south of Bald Mountain Switchback located to the south of the Hiwassee loop nineteen miles to the east. In addition to the main line east of the powerhouse, there is also a spur line built in 1943 that leads straight to the powerhouse. Portions of the Knoxville Southern Railroad were either rebuilt or sidings and materials were upgraded to accommodate the heavy equipment required to build the facilities at Apalachia.[14] The railroad right-of-way is located between the powerhouse and the penstocks (*See Photo 28*).

9. Pedestrian Bridge across the Hiwassee River, ca. 2000 (Non-Contributing Structure)

Crossing the Hiwassee River south of the powerhouse is a suspension pedestrian bridge. The bridge was constructed ca. 2000 and was refurbished with new wires and treated wood in 2014. The bridge is constructed with suspension cable wires and steel beams supporting wood planks and a wood railing. A suspension cable pier is located on the east and west river bank (*see Photo 29 & 30*).

[14] National Register of Historic Places, Knoxville Southern Railroad Historic District, Reliance, Polk County, Tennessee, National Register #07000187.

Apalachia Hydroelectric Project | Cherokee County, NC
Name of Property | County and State

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.
- [X] 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.

Criteria Considerations N/A
(Mark "x" in all the boxes that apply.)
Property is:

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

Areas of Significance
(Enter categories from instructions.)
ARCHITECTURE
ENGINEERING
INDUSTRY
MILITARY

Period of Significance
1943-1965

Significant Dates
1941-1943

Significant Person
(Complete only if Criterion B is marked above.)
N/A

Cultural Affiliation
N/A

Architect/Builder
Architect: Tennessee Valley Authority; U.S. Army Corps of Engineers; Roland Wank; Rudolph Mock; Mario Bianculli
Builder: Tennessee Valley Authority

Statement of Significance Summary Paragraph

The Apalachia Hydroelectric Project meets National Register criteria A and C for its historical and architectural significance as an integral part of the Tennessee Valley Authority Hydroelectric Project. The Apalachia Hydroelectric Project is significant in the expansion of energy, improvement of quality of life through transmission of electricity, and control of seasonal flooding. The Apalachia Hydroelectric Project was one of twenty-five dam sites constructed by the Tennessee Valley Authority (TVA) for the purpose of generating electrical power from, improving navigation of, and controlling seasonal flooding of the river system of the region. The main objective of the 1933 Tennessee Valley Authority Act was the creation of a continuously navigable nine-foot channel from the mouth of the Tennessee River to Knoxville, as well as flood control, power generation, and public benefits. The Apalachia Hydroelectric Project was part of a group of four dams built on the Hiwassee River and its tributaries as proposed by TVA in its 1936 report to Congress. It is significant at the local, state, and national level. For architecture, it is significant for its Streamlined Moderne style, embodying the TVA's mission of progress in its economy of adornment, as well as the industry of the machine age. The project's significance in engineering is reflected in TVA's overall plan for an integrated system of river management through site-specific designs tested on scaled models. The significance of the Apalachia project in industry is seen through the increase of household electricity use and in war-related manufacturing. Finally, the Appalachia project is significant in the area of military for its supply of electricity to the war effort. The Apalachia Hydroelectric Project meets the registration requirements set forth in the Multiple Property Documentation Form, "Historical Resources of the Tennessee Valley Authority Hydroelectric Project, 1933-1979."

Narrative Statement of Significance

The Tennessee Valley Authority (TVA) was created under President Roosevelt's New Deal program as part of his "First One Hundred Days." Roosevelt envisioned "a corporation clothed with the power of government but possessed of the flexibility and initiative of a private enterprise." To this end, Congress passed the TVA Act on May 18, 1933.[15] The multi-purpose legislation sought to improve navigation and flood control of the Tennessee River, spur agricultural and industrial development in the Tennessee Valley, and provide for national defense via government facilities in the proximity of Muscle Shoals, Alabama (Sec. 1). The act authorized the TVA Corporation to acquire real estate for the construction of dams, reservoirs, power houses, transmission lines, or navigations projects at any point along the Tennessee River and its tributaries (Sec. 4i).[16]

The Apalachia Hydroelectric Project takes its name from a nearby crossroads community and flag stop on the Louisville & Nashville Railroad, Old Apalachia.[17] Old Apalachia was originally known as "Apalachia," an industrial town on the north side of the Hiwassee River at the

[15] "History of the Tennessee Valley Authority," at website http://www.policyalmanac.org/economic/archive/tva_history.shtml accessed April 16, 2015.
[16] Ibid.
[17] Tennessee Valley Authority, "The Hiwassee Valley Projects," (Knoxville: Tennessee Valley Authority, 1948), 8.

confluence of Shuler Creek. Apalachia was a thriving timber community, but was renamed as Old Apalachia once the timber boom came to an end in the 1920s. The town later became known as Apalachia Station on the Louisville & Nashville Railroad and is currently listed as a contributing site in the Knoxville Southern Railroad Historic District (National Register #07000187, March 21, 2007). The town site of Apalachia is located one and one-half miles west of the Apalachia dam and six and one-half miles from the Apalachia power facilities. The town site had been nearly abandoned with only a railroad stop extant at the time the Apalachia Hydroelectric Project was proposed in 1936. The TVA Board of Directors requested funding for the Hiwassee Valley Projects in fiscal year 1941. Initially, the bill recommended $40,000,000 in funds be approved for the Hiwassee projects with $1,000,000 available immediately. However, the entire $40,000,000 was approved immediately due to the urgency of World War II. The final bill for the Hiwassee projects passed both Houses of Congress and was signed by the President on July 16, 1941. The TVA formally approved the project on July 17, 1941. The closure of the dam and filling of the reservoir began on February 14, 1943. Construction of the dam used 220,000 cubic yards of concrete. Of the two generating units placed in operation, Unit 2 was placed in service on September 22, 1943, followed by Unit 1 on November 17, 1943.[18]

Total land costs for the project amounted to $467,984, which included acquisition by fee or condemnation proceedings, flowage easements, and highway relocation. Direct construction costs, such as labor, materials, equipment, transportation, totaled $19,556,972. Indirect construction costs, including accounting, timekeeping, office supplies, and police service, came to $1,711,013. Design and engineering expenditures, which included salaries and expenses of executive engineers, technicians, and inspectors, amounted to $811,508. These amounts plus other categorized costs brought the total project to $23,762,118.[19]

Total payroll count peaked at approximately 3,600 workers at the beginning of 1942. Employment remained at that level through the summer months. Construction at the four Hiwassee projects (Apalachia, Ocoee, Chatuge, and Nottely) peaked at the same time at 8,700 total workers.[20]

The project required the relocation of twenty-two families from the reservoir, all of which were permanent residents. The area of the project was primarily of timber with some agricultural areas; therefore, just five families were farm owners, ten were farm tenants, and the remaining seven were non-farming. Of the 12,370 acres acquired for the project, only 281 was cleared land. Due to the mountainous terrain of the Apalachia project reservoir, timber land was the only reservoir clearing necessary.[21]

[18] Tennessee Valley Authority, *The Design of TVA Projects, The Mechanical Design of Hydro Plants: Technical Report No. 24 Volume 3*, (Washington, D.C.: U.S. Government Printing Office, 1960), 143.

[19] Tennessee Valley Authority, "The Hiwassee Valley Projects," (Knoxville: Tennessee Valley Authority, 1948), 579.

[20] Ibid., 332-33.

[21] Ibid., 530.

The Apalachia project required the acquisition of 12,370 acres of land. The Union Power Company owned 2,342 acres and the Hiwassee-Nolichucky Power Company owned 8,100 acres. Of the total land acquired from the Union Power Company, fifty-seven percent was condemned due to defective titles and the remaining forty-three percent was purchased through voluntary sale. All 8,100 acres owned by the Hiwassee Nolichucky Power Company were condemned; however, prior to a hearing before the commission, a settlement was agreed upon without any contest. Of the remaining 1,928 acres, ninety-four percent was acquired through voluntary sale, and six percent was condemned.[22] Reconnaissance surveys made by the TVA indicated that no cemeteries would be affected by the construction of the dam, tunnel, or reservoir of the Apalachia project.[23]

The Apalachia project promoted stable shorelines, encouraging reservoir recreation. The TVA anticipated that since the Apalachia Reservoir lies within the boundaries of the Nantahala National Forest, the United States Forest Service would eventually set up the required public use facilities. Due to the isolated location of the Apalachia project and the limited access to the shoreline of the reservoir, the TVA anticipated very little need for public visitor facilities within the reservation boundary. Therefore, there are no TVA recreational facilities located within the Apalachia Reservoir.[24]

Since their construction, the dam, pipeline, surge tank, valve house, penstocks, powerhouse, and switchyard have not been significantly altered and retain much of their original exterior design and detailing. The interior of the powerhouse remains intact as well with minor renovations to office areas. All other interior walls, and floor and ceiling finishes remain original to the 1943 construction era.

SIGNIFICANCE IN ARCHITECTURE

TVA's hydroelectric projects were designed to embody its mission for social progress. The goals and achievements of these projects - power production, navigation, flood control, malaria prevention, reforestation, and erosion control – reached across the Valley region penetrating America's social and economic strata. Architect Roland Wank impressed upon a receptive board of directors that government projects were beholden to their real stockholders, the American taxpayers, and should be open for public viewing. Further, Wank stated that the design of powerhouses should both welcome the public and convey strength in purpose. Thus, TVA powerhouses were designed as massive monoliths with visitor reception areas.[25] A prominently

[22] Ibid., 517.
[23] Ibid., 552.
[24] Ibid., 571-572.
[25] North Callahan, *TVA – Bridge Over Troubled Waters: A History of the Tennessee Valley Authority*, (Cranbury, NJ: A. S. Barnes and Co., Inc., 1980), 33; and Erwin C. Hargrove, *Pioneers of Myth: The Leadership of the Tennessee Valley Authority, 1933-1990*, (Princeton, NJ: Princeton University Press, 1994), 30-33.

displayed message in every TVA powerhouse would emphasize the project as "Built for the People of the United States of America."

The pre-World War II TVA projects exemplify the Streamline Moderne style, a late version of the Art Deco style popular during this period. Streamline Moderne was an expression of progress, a particularly important underpinning of the New Deal agenda. Stylistic elements that manifested this ideology include the use of geometric shapes, basic and pure in form, sleek and shiny materials evoking machinery and movement, and restrained décor suggesting an economical design ethic. Stream Moderne architecture often emphasized curved forms and horizontal lines, sometime including nautical motifs.

The design of the Apalachia dam and powerhouse reflects the "modernism" that the TVA architects and engineers strived for in the 1930s and early 1940s. The dam was built utilizing the most advanced methods of its time, and the powerhouse was built with Streamline Moderne characteristics on both its exterior and interior. The Apalachia powerhouse retains several elements expressing the style. The generating units themselves convey the Streamline Moderne style, with their smooth-finish metal housing and perfectly cylindrical form. The powerhouse interior retains its original interior aluminum doors, original light fixtures, interior wall and floor finishes, and original restroom fixtures and finishes. These elements express the polished minimalism of the Streamline Moderne architectural style.

On the exterior, the powerhouse's geometric block form is Streamline Moderne in style and expresses utilitarian simplicity. The powerhouse superstructure and generating room retain original architectural features including streamlined groupings of windows with decorative portholes below on the west elevation. The dam itself embodies progress, in its engineering and its design. Its massive scale represents the immensity of the project, spatially and philosophically. The architectural design of the dam employs smooth surfaces of concrete, and its steel elements such as spillway gates, emphasize geometric forms and horizontal lines. The support structure consists of embedded cantilevered concrete piers.

SIGNIFICANCE IN ENGINEERING

The Apalachia Hydroelectric Project is an integral part of the overall engineering design of the TVA system. The dam was built utilizing the most advanced methods of its time. The four Hiwassee Valley projects are located in the Hiwassee River Basin along the Hiwassee River and its tributaries. The Hiwassee Valley projects cover a six county region with a rugged mountainous terrain inundated with valleys where the Tennessee-North Carolina state line joins the Georgia state line. The rivers and streams follow the contours of the valleys. TVA developed its network of hydroelectric projects in the context of the natural conditions at each location. Site, plans, materials to be used, architectural designs, exact placement of a dam axis and its associated components, spillway type, and many other engineering nuances of each project took

into account the natural topography, elevation changes, rock strata, foundation bedrock, annual rainfall, and watershed volume. The numerous laboratory models and studies performed on most other TVA projects seeking information on ideal combination of dam site, reservoir size, turbine count, and many other inter-related aspects engineering design were performed, however, streamlined for the Hiwassee Valley Projects due to the emergency nature of the projects under the necessity of war driven power generation.

In terms of site preparation, the Hiwassee projects required the usual amount of detailed engineering investigation and planning as all other TVA projects; however, due to the immediate need for construction, site preparation and analysis were completed as soon as the TVA board authorized the project in July of 1941. Surveying and mapping included basic control surveys, aerial photography of 424 square miles, land ownership reconnaissance surveys through panimetric-base plane table sheets and deed copying of 52,521 acres, marking and mapping contours of 615 miles, planning and mapping relocation of roads, rail lines, and utility lines, drainage surveys for malaria control, and numerous other adjustments and computations and the work progressed.[26]

The TVA's hydroelectric projects were designed, in part, to manage the rise and fall of the annual cycles of the Tennessee River system. While the reservoirs on the Tennessee River are designed to provide proper water depth for navigation of barge traffic, reservoirs on the tributary rivers, such as the Hiwassee Valley Projects, serve to produce additional power to the TVA system as well as store water to manage water flow into the Tennessee River. Since the drainage of the Hiwassee River contributes to floods in Chattanooga, the necessary storage space was created by the four Hiwassee Valley projects to retain a large portion of the flood flow into the Tennessee River. The four Hiwassee Valley reservoirs, completed between 1941 and 1943, provide a substantial degree of flood control to the Tennessee River watershed, diminishing potentially damaging floods at Chattanooga.[27] The storage capacities of the Hiwassee reservoirs figure into the power potential downstream. Releases at Apalachia develop energy not only at that facility, but also at Chickamauga.[28]

SIGNIFICANCE IN INDUSTRY

Completed in 1943, the Apalachia Hydroelectric Project contributed electrical power to the overall TVA system. Upstream reservoirs such as the Apalachia project contributed to navigation and flood control as an integral component of the overall river system. Cheap electricity generated at TVA plants lured new industry to the region, influencing diversification of economy in the heretofore agriculturally-based economy of the Tennessee Valley. The workforce employed in manufacturing grew from 222,000 jobs to 382,000 from 1929 to 1950. The pay rate

[26] Ibid, 506.
[27] Tennessee Valley Authority, "The Hiwassee Valley Projects," (Knoxville: Tennessee Valley Authority, 1948), 49.
[28] Ibid.

for a manufacturing job in the region increased by 442 percent compared with the national average gain of 282 percent. During the early post-war years, the TVA supplied electricity at a rate (1.35 cents per kilowatt-hour) less than half of the national average (2.78 cents per kilowatt-hour).[29] By 1946, the TVA's power plants had a capacity of 2.5 million kilowatts of power and brought electricity to 668,000 households in the Tennessee Valley.[30]

In recent decades TVA has continued to recruit industry with attractive affordable power. Economic development is a critical component of TVA's mission. In 2013, TVA Economic development helped attract or retain almost 52,000 jobs and generate nearly $5.0 billion in capital investment across the TVA region.[31] The Apalachia Hydroelectric Project contributes electrical power to industries throughout the region.

SIGNIFICANCE IN MILITARY

The Apalachia Hydroelectric Project was completed in 1943 and originally much of its electricity went to industries essential to the military during World War II. The majority of the electricity produced at Appalachia was transmitted to the Aluminum Company of American (ALCOA). ALCOA was the nation's leading manufacturer of aluminum which was a critical component in the production of military aircraft. By 1942, the TVA had completed or was in the process of building twelve hydroelectric facilities. Of the 12 billion kilowatt hours of energy produced among the TVA system during World War II, sixty-six per cent was devoted to the war effort.[32]

The contributions of TVA power continued to assist the military after World War II. The enrichment of uranium for atomic weapons continued to be one of the primary purposes of the plants at Oak Ridge. Another major facility, the Paducah Gaseous Diffusion Plant, was completed in 1952 and also supplied enriched uranium for nuclear weapons during the Cold War. The extent of these plants using TVA's power was illustrated in 1956 when the Atomic Energy Commission used 56% of all electricity sold by the TVA for its plants at Oak Ridge and Paducah. The expansion in the use of TVA power by the nation's atomic defense plants mirrored the increase in Cold War expenditures with the start of the Korean War in 1950. In fiscal year 1951, TVA supplied only 2.2 billion kwh to Federal defense agencies (mainly AEC at Oak Ridge), representing 13% of TVA sales. Sales in 1956 amounted to 30.5 billion kwh with a 40% increase alone in 1955. In 1956, TVA furnished at least half the power required by all AEC defense plants in America.

[29] Patricia Bernard Ezzell, "Tennessee Valley Authority in Alabama (TVA)." At webpage http://www.encyclopediaofalabama.org/article/h-2380. Accessed April 22, 2015.
[30] Carroll Van West, *Tennessee's New Deal Landscape*, (Knoxville: University of Tennessee Press, 2001), 11.
[31] "Economic Development," at webpage http://www.tva.com/econdev/index.htm accessed May 5, 2015.
[32] Ezzell, "Tennessee Valley Authority in Alabama (TVA)."

Summary

The Apalachia Hydroelectric Project is one of twenty-five (25) projects constructed by the Tennessee Valley Authority (TVA) for the purpose of generating electrical power from, improving navigation of, and controlling seasonal flooding of the river system of the region. The project brought construction jobs and later electricity to this rural area. The Apalachia Hydroelectric Project brought new opportunities and spurred economic development in the surrounding counties. The Apalachia project is an important component in the vast TVA system of flood control and power generating, as well as contributing to management of river navigation.

The Apalachia Hydroelectric Project retains much of its integrity from its original design of the early 1940s. The dam and powerhouse have not been significantly altered and display their original Streamline Moderne design in their exterior and interior detailing. The Apalachia Hydroelectric Project meets the registration requirements set forth in the Multiple Property Documentation Form, "Historical Resources of the Tennessee Valley Authority Hydroelectric Project, 1933-1979" and this MPDF contains additional contextual information concerning TVA and its hydroelectric system.

9. Major Bibliographic References

Bibliography

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"Economic Development." At website http://www.tva.com/econdev/index.htm. Accessed August 18, 2015.

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_____, *The Hiwassee Valley Projects: A Comprehensive Report on the Planning, Design, Construction, and Initial Operations of the Four Projects, in the Hiwassee Basin, Constructed on the Emergency Basis during World War II*, *Technical Report No. 5, Volume 2*. Washington, D.C.: U.S. Government Printing Office, 1948.

West, Carroll Van. *Tennessee's New Deal Landscape*. Knoxville: University of Tennessee Press, 2001.

Wheeler, W. Bruce. "Tennessee Valley Authority." At webpage Tennessee Encyclopedia of History and Culture. Accessed August 18, 2015.

Apalachia Hydroelectric Project — Name of Property
Cherokee County, NC — County and State

Previous documentation on file (NPS):		Primary location of additional data:	
	preliminary determination of individual listing (36 CFR 67 has been requested)	**X**	State Historic Preservation Office
	previously listed in the National Register		Other State agency
	previously determined eligible by the National Register	**X**	Federal agency
	designated a National Historic Landmark		Local government
	recorded by Historic American Buildings Survey #		University
	recorded by Historic American Engineering Record #		Other
	recorded by Historic American Landscape Survey #	Name of repository: Tennessee Valley Authority Knoxville, TN	
Historic Resources Survey Number (if assigned):			

10. Geographical Data

Acreage of Property 529 acres **USGS Quadrangle** Farner TN/ NC

Latitude/Longitude Coordinates

1. Latitude: Longitude:
2. Latitude: Longitude:
3. Latitude: Longitude:
4. Latitude: Longitude:

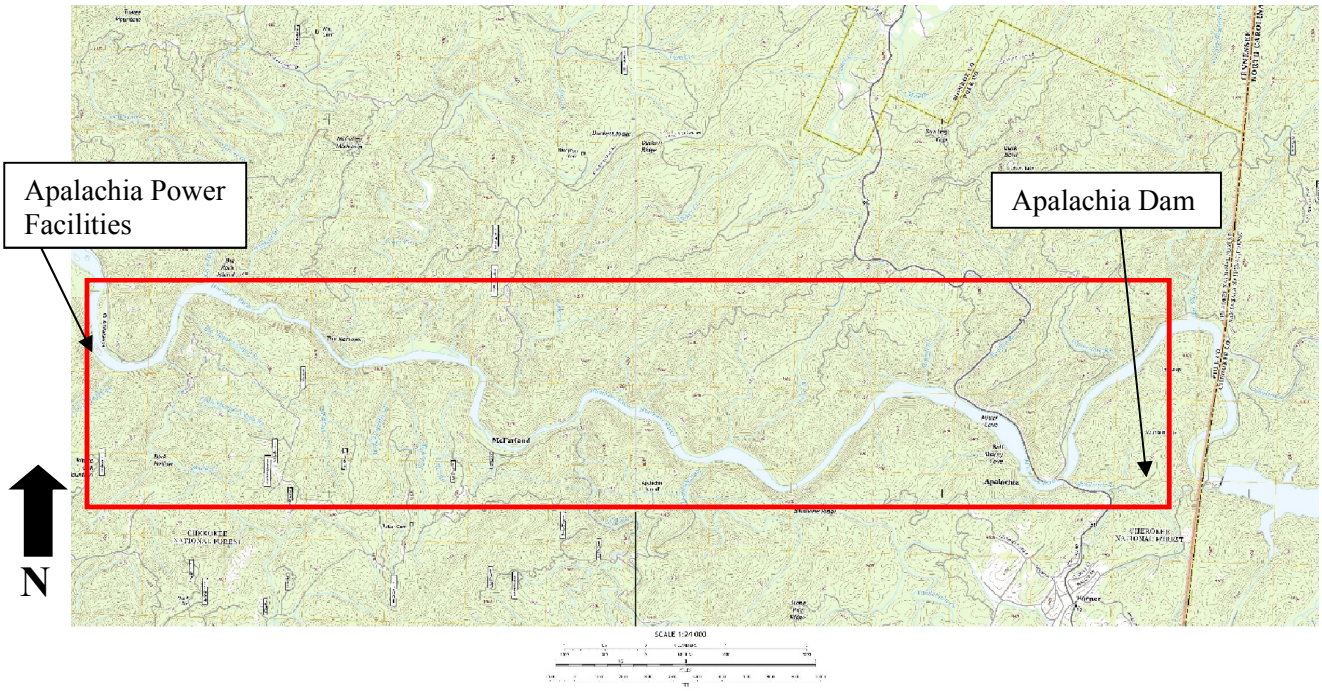
Verbal Boundary Description

The boundary for the Apalachia Hydroelectric Project is depicted as a dashed line on the accompanying Quad map and site plan map. The boundary includes property to encompass the adjacent recreational facilities as well as the immediate environs of the dam and powerhouse.

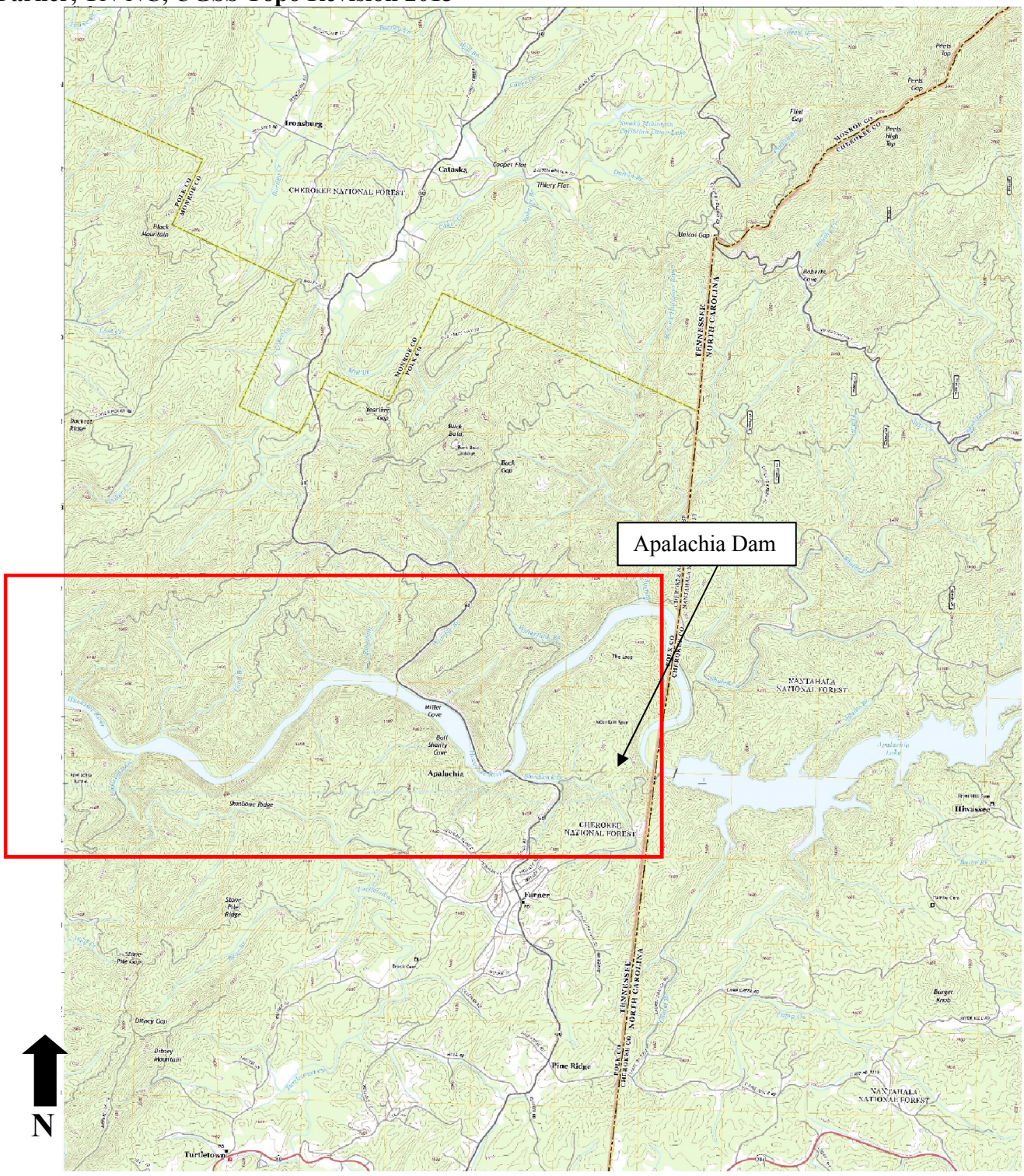
Boundary Justification

The boundary includes all facilities necessary for the operation of the hydroelectric project and/or associated with the mission of TVA, which includes power generation, navigation, and public recreation. The boundary omits other TVA lands not directly associated with hydroelectric production.

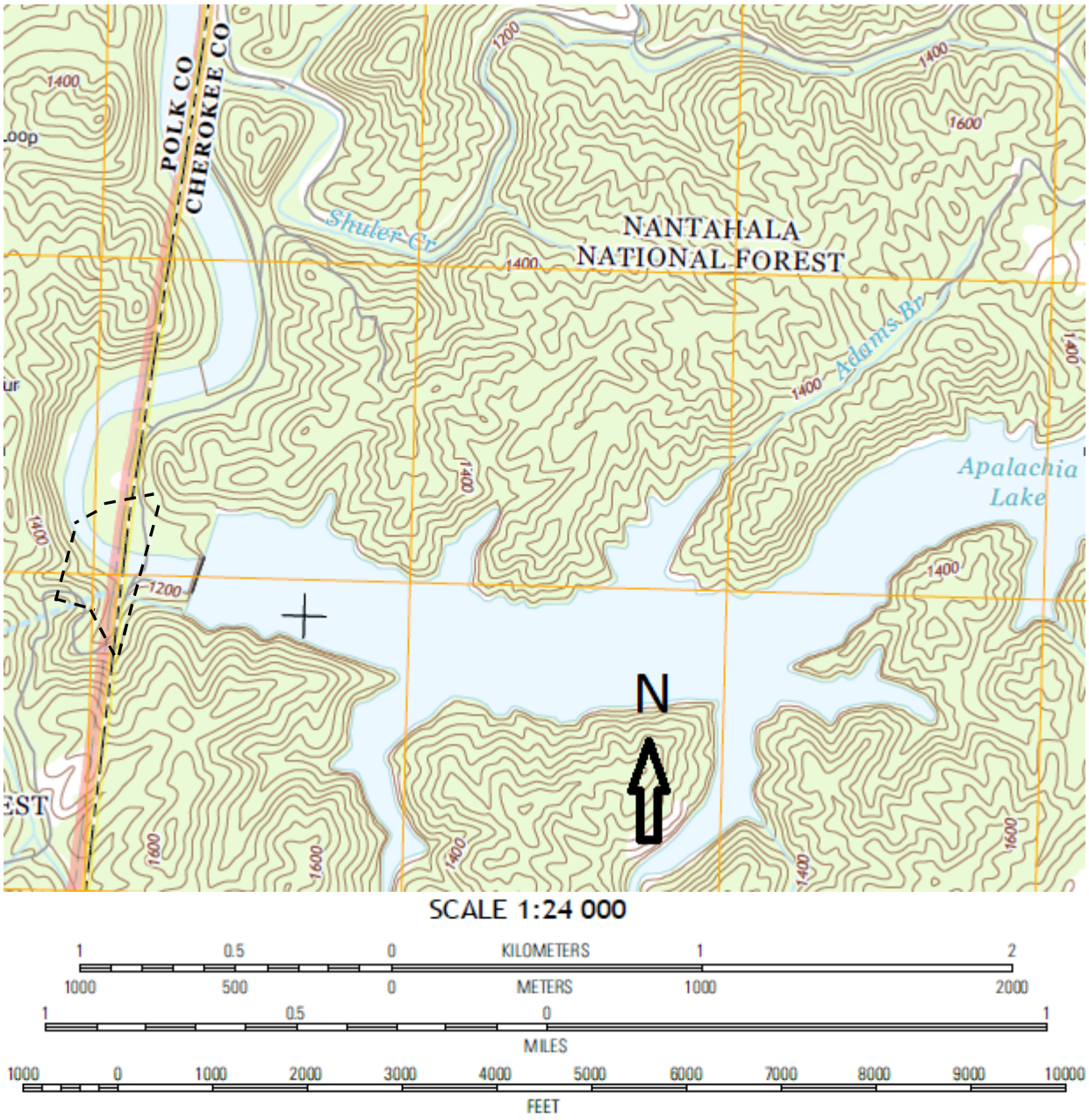
Combined and enlarged section depicting Apalachia Dam and Powerhouse from 2013 Farner, TN-NC and McFarland, TN Quad



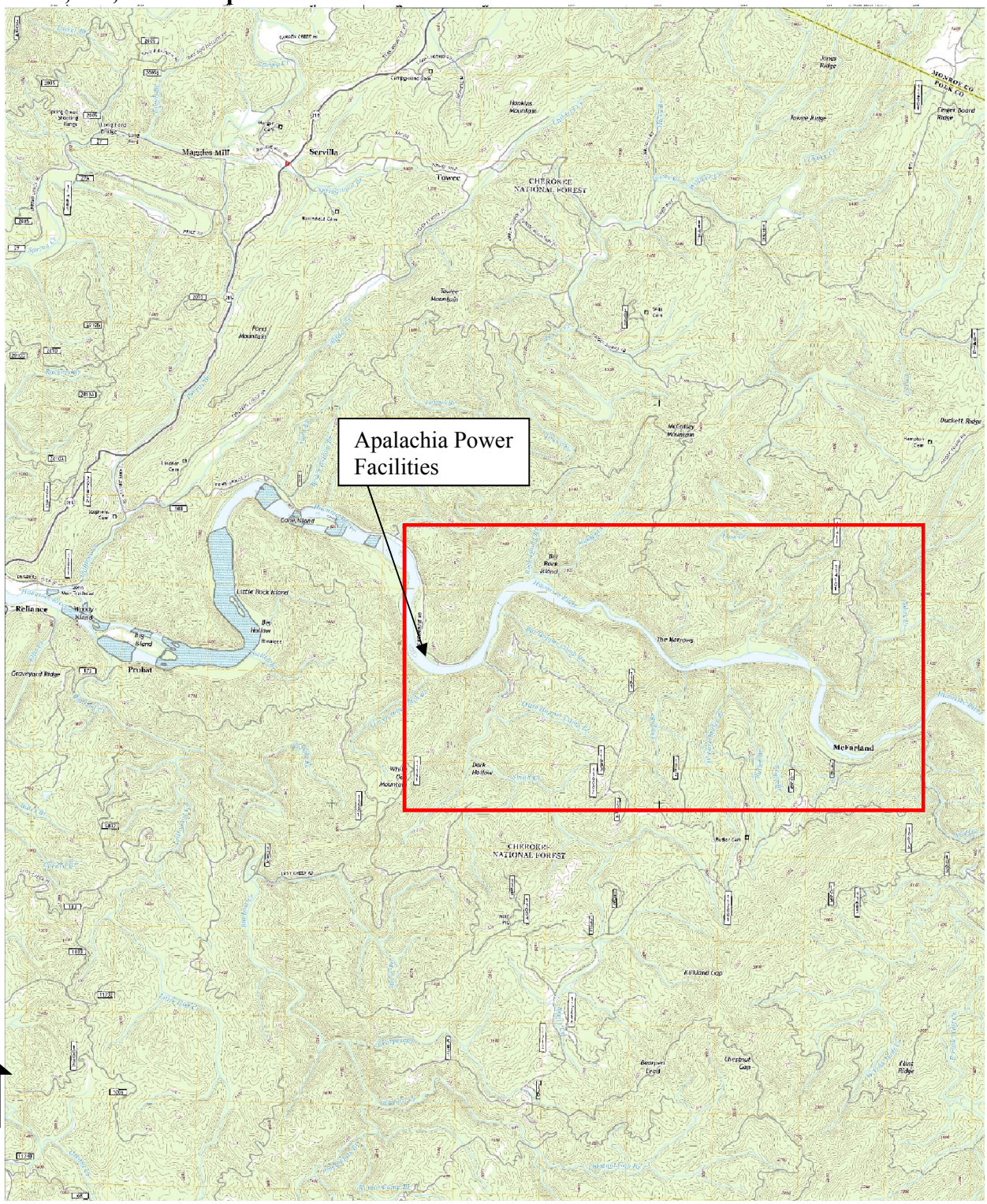
Farner, TN-NC, UGSS Topo Revision 2013



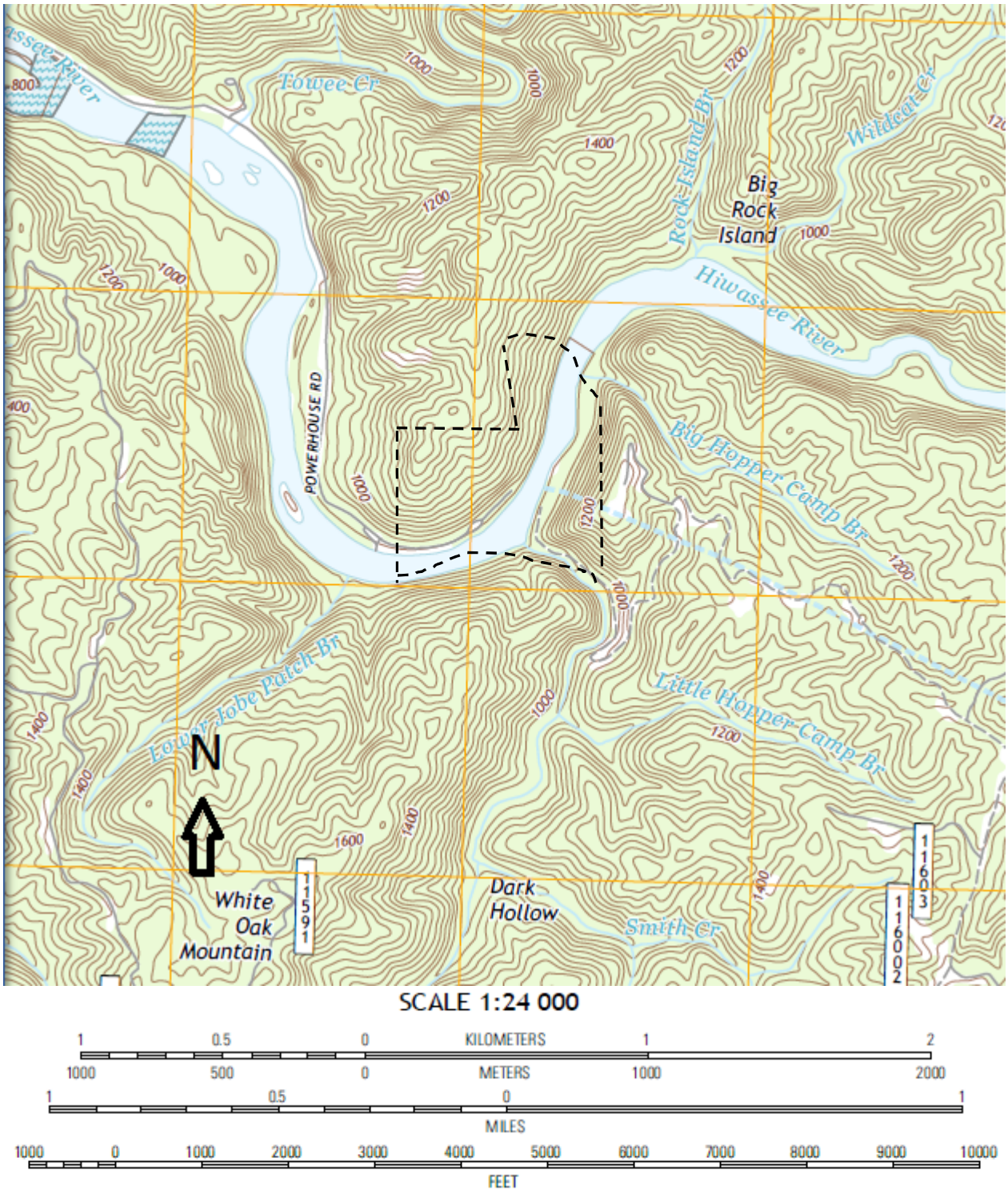
Farner Topo Quad, 2013 with NR boundary for Apalachia Dam



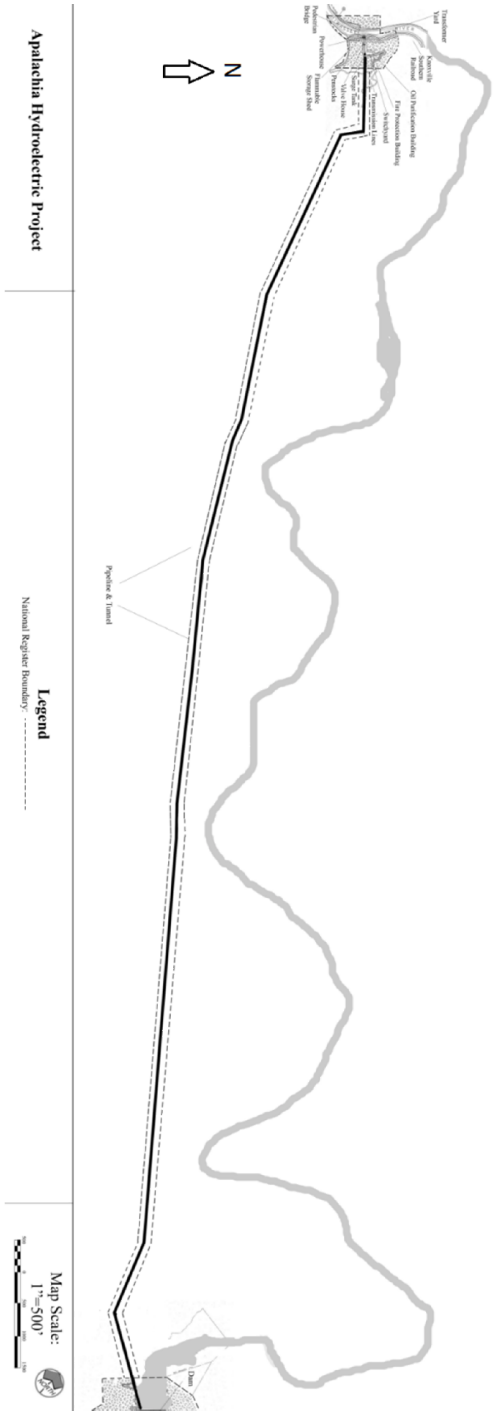
McFarland, TN, UGSS Topo Revision 2013



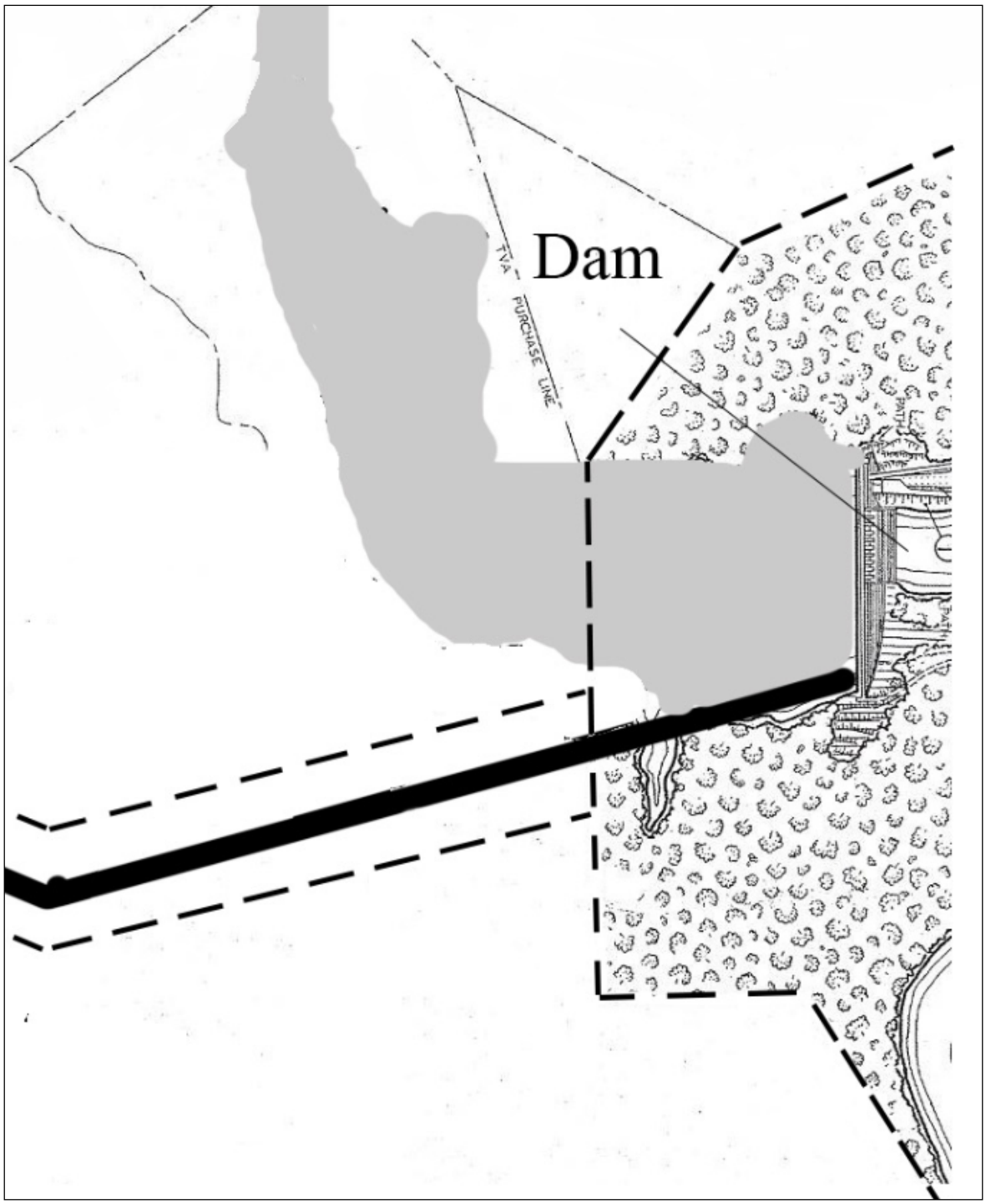
McFarland Topo Quad, 2013, with NR boundary for Apalachia power facilities



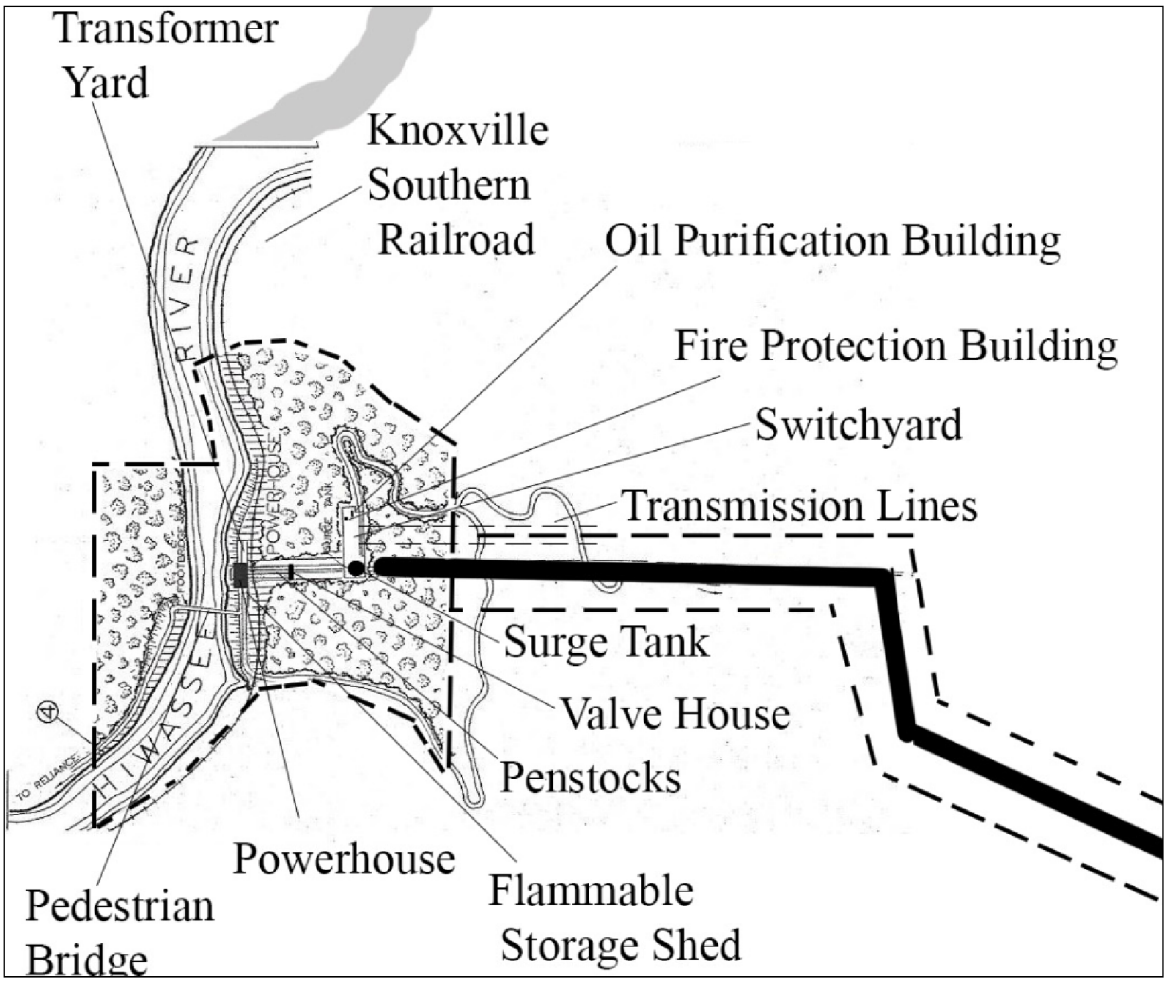
Site Plan and National Register boundary for Apalachia Hydroelectric Project.



East end of Apalachia site plan, enlarged.



West end of Apalachia site plan, enlarged.



Apalachia Hydroelectric Project | Cherokee County, NC
Name of Property | County and State

11. Form Prepared By

Name: Rebecca Hightower; Andra Kowalczyk Martens; Phil Thomason
Organization: Thomason and Associates
Street & Number: P.O. Box 121225 Date: August 19, 2015
City or Town: Nashville Telephone: 615-385-4960
E-mail: Thomason@bellsouth.net State: TN Zip Code: 37212

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location.
- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to map.
- **Photographs (**refer to Tennessee Historical Commission National Register *Photo Policy* for submittal of digital images and prints**)**
- **Additional items:** (additional supporting documentation including historic photographs, historic maps, etc. should be included on a Continuation Sheet following the photographic log and sketch maps)

Photo Log

Name of Property: Apalachia Hydroelectric Project
City or Vicinity: Murphy, NC/Farner, TN
County: Cherokee/Polk State: North Carolina/Tennessee
Photographer: Philip Thomason
Date Photographed: June 25, 2015

1 of 30 - South side of Apalachia Dam looking west.

2 of 30 – Spillway Gates looking northwest.

3 of 30 – Pipeline and Intake at Dam looking southeast.

4 of 30 – Apalachia Pipeline looking southwest.

5 of 30 – Pipeline into concrete tunnel looking southwest.

6 of 30 – Surge tank looking west.

7 of 30 – Penstocks from surge tank to valve house looking east.

8 of 30 – Penstocks from surge tank to valve house looking northeast.

9 of 30 – Powerhouse exterior, west elevation, looking northeast.

10 of 30 – Powerhouse exterior, south elevation, looking northeast.

11 of 30 – Powerhouse exterior, north elevation looking south.

12 of 30 – Powerhouse exterior, east elevation looking northwest.

13 of 30 – Powerhouse interior, erection bay

14 of 30 – Powerhouse interior, lobby signage.

15 of 30 – Powerhouse interior, restroom.

16 of 30 – Powerhouse interior, office corridor.

17 of 30 – Powerhouse interior, assembly room.

18 of 30 – Powerhouse interior, generator room ground floor.

19 of 30 – Powerhouse interior, generator No. 1.

20 of 30 – Powerhouse interior, generator No. 1 wheel pit access in basement.

21 of 30 – Powerhouse interior basement where penstocks enter.

22 of 30 – Switchyard looking northwest.

23 of 30 – Transformer Yard looking southwest.

24 of 30 – Transmission Lines looking southwest.

25 of 30 – Switchyard Oil Purification Building looking.

26 of 30 – Switchyard Fire Protection Building, looking west.

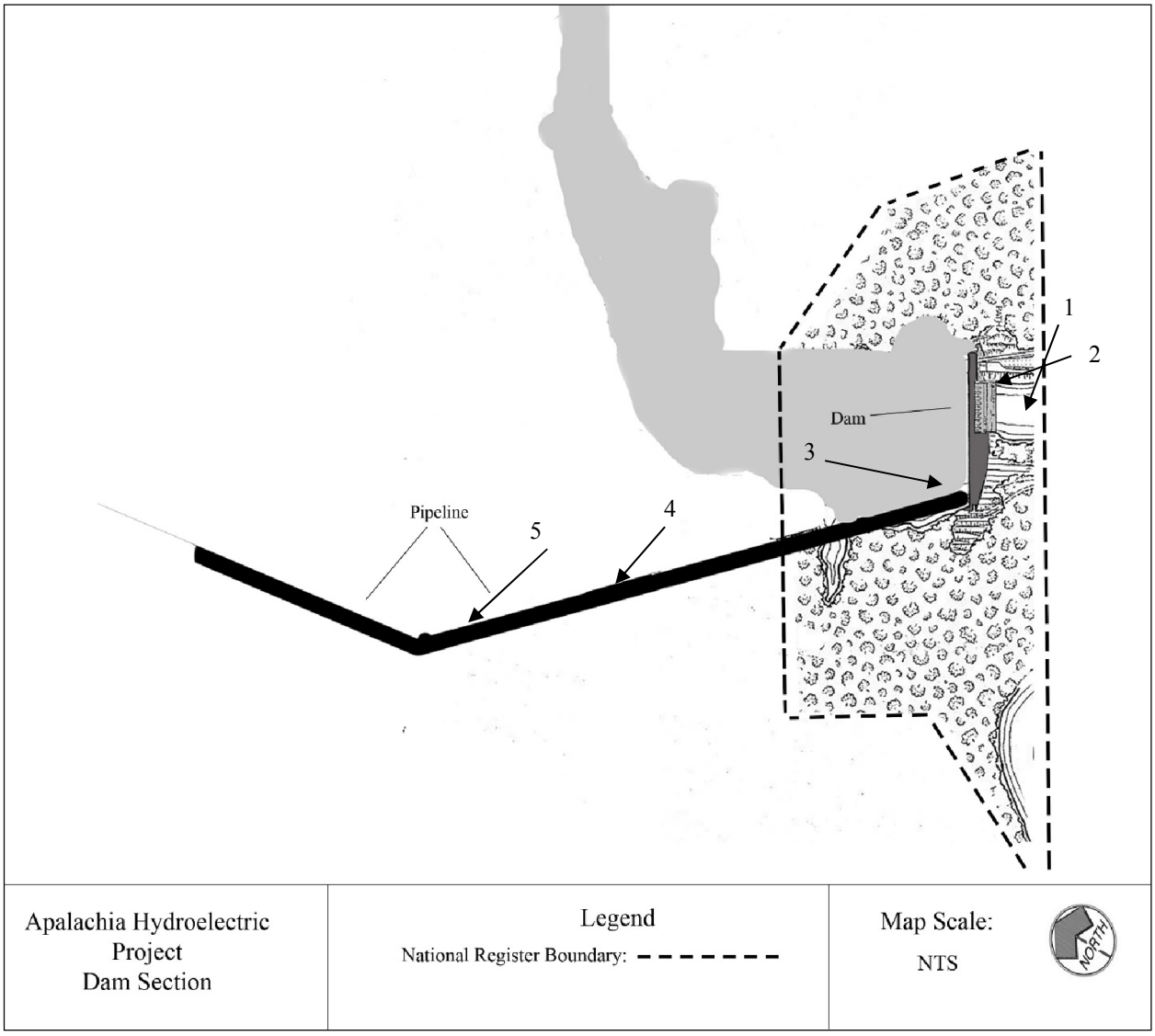
27 of 30 – Flammable Storage Shed, looking northeast.

28 of 30 – Railroad Tracks of the Knoxville Southern Railroad, looking northeast.

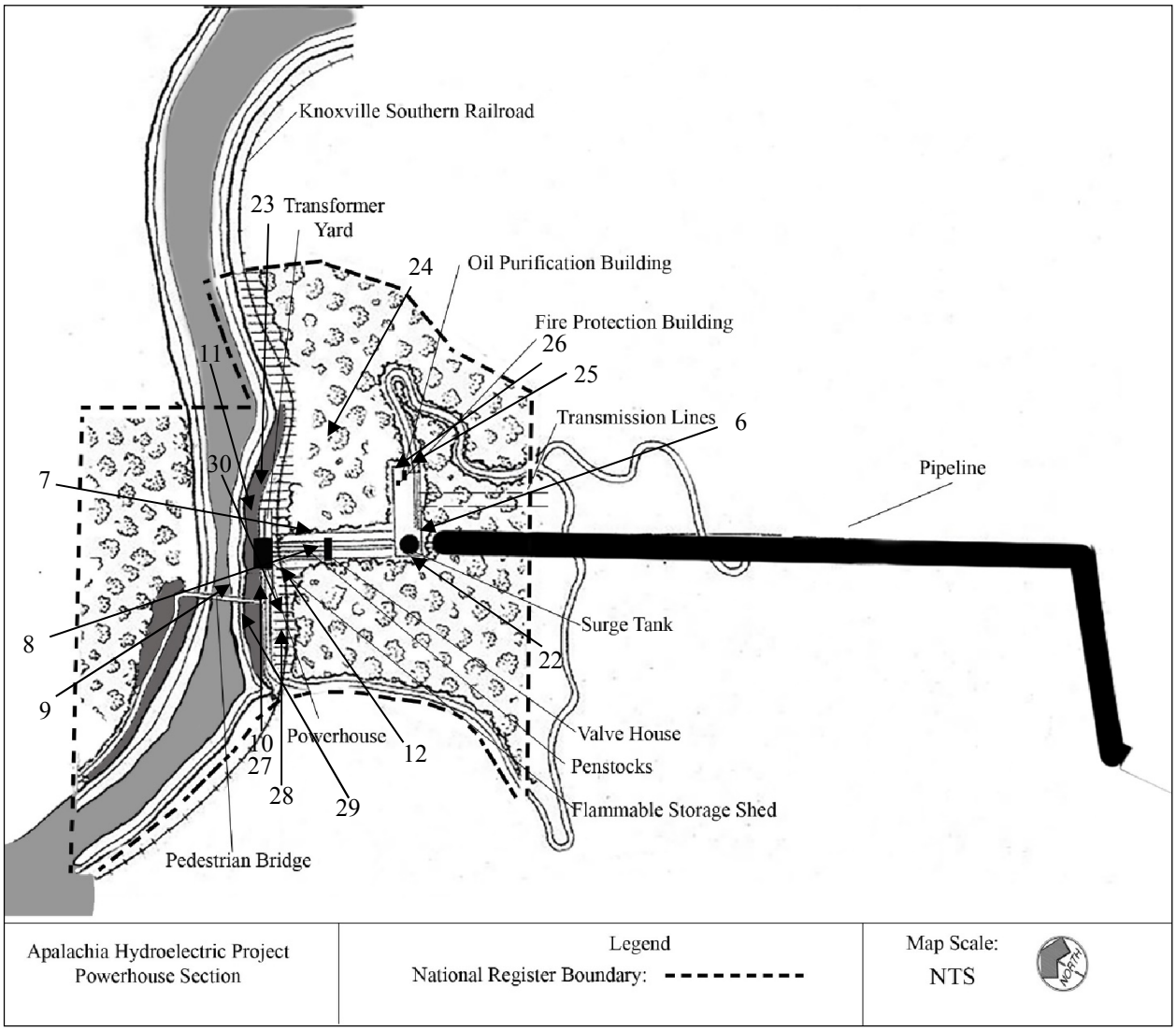
29 of 30 – Pedestrian Bridge over the Hiwassee River looking north.

30 of 30 – Pedestrian Bridge east pier, looking south.

East end of photo log map key (not to scale)



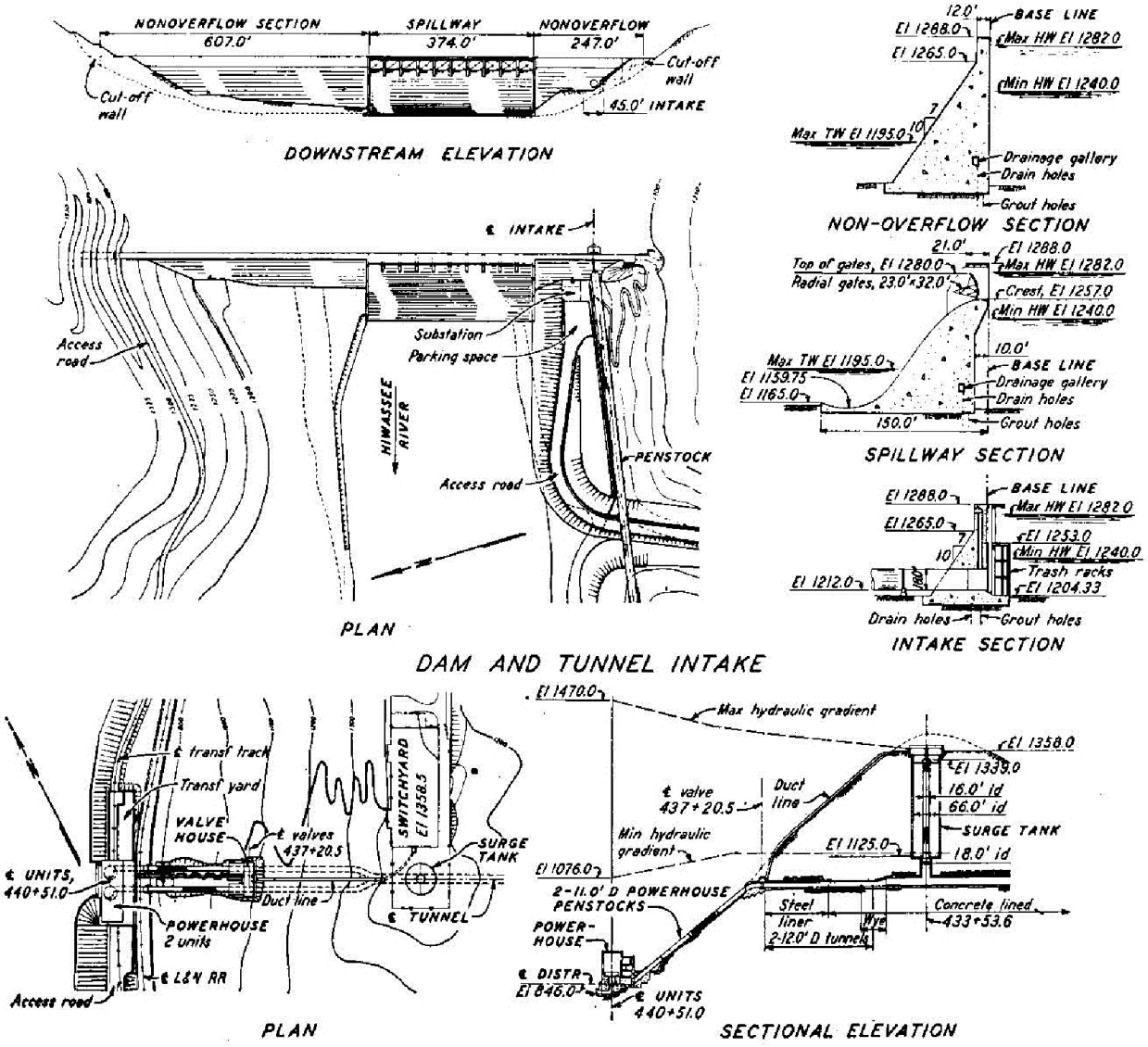
West end of photo log map key (not to scale)



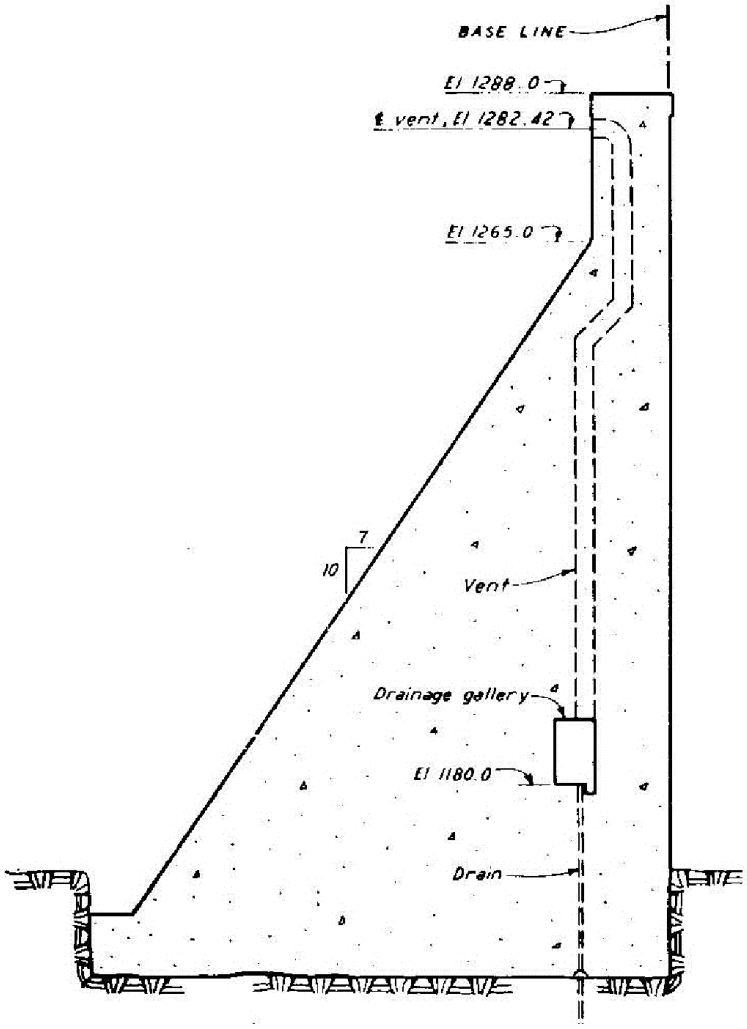
Powerhouse interiors, photos #13-21

Site Plans and Sections

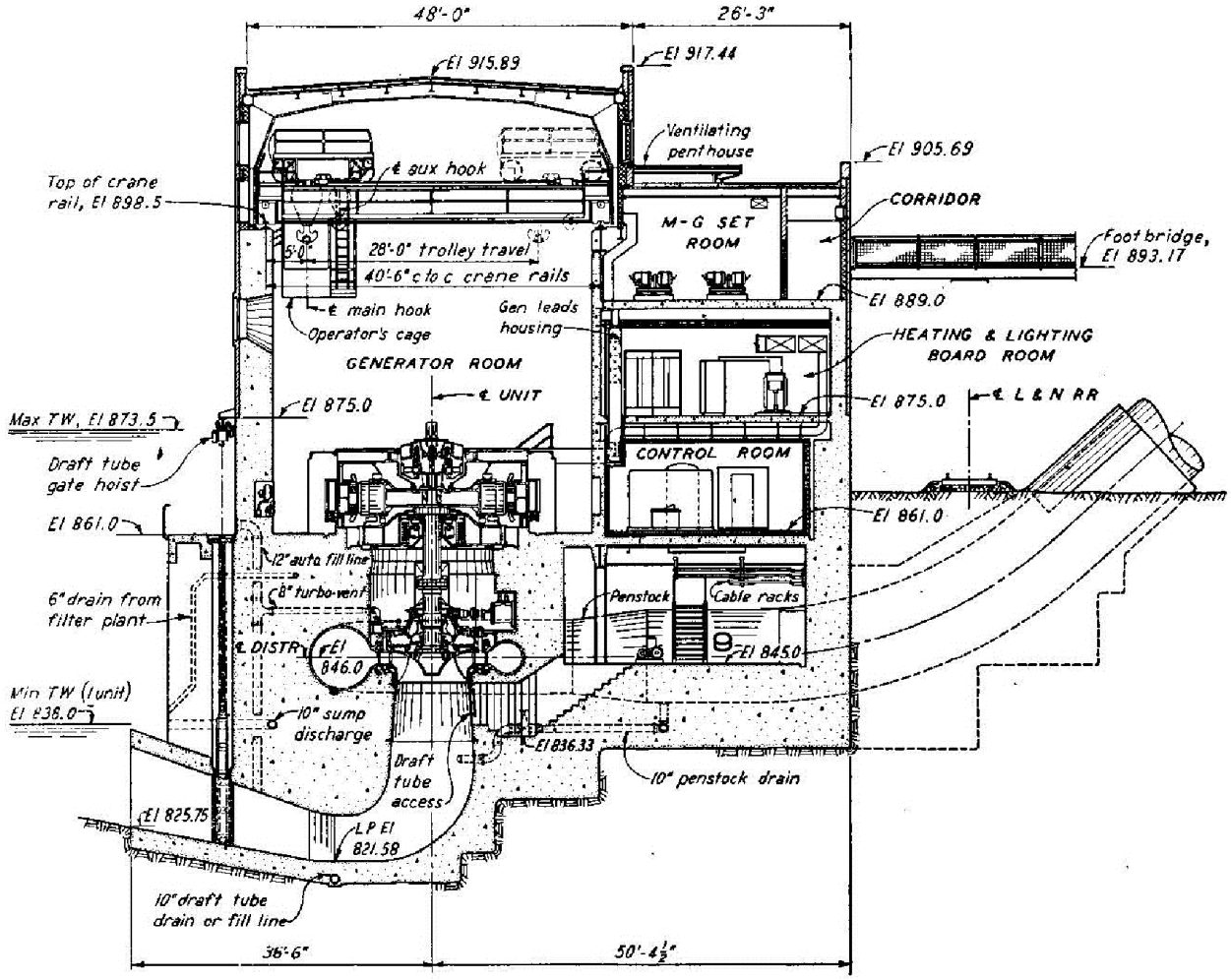
Site plan of Apalachia Hydroelectric Project



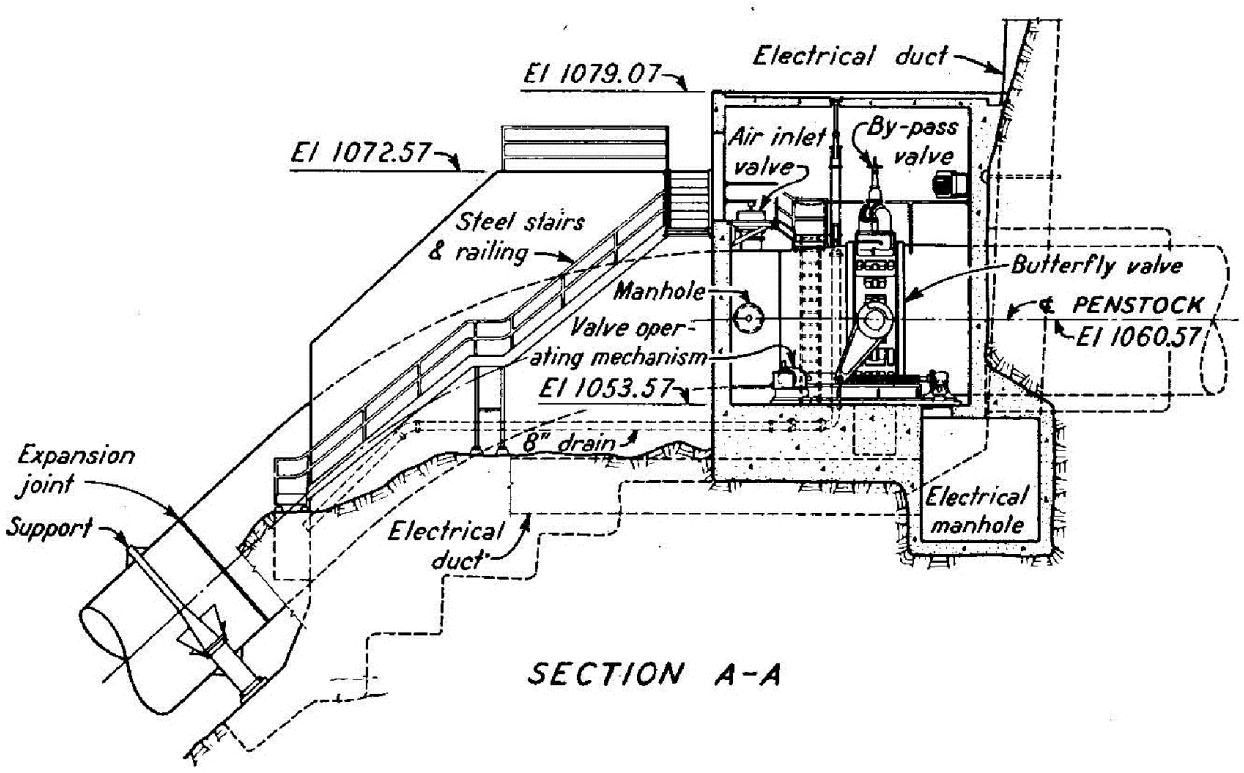
Section of the Apalachia Dam



Section of Apalachia Powerhouse



Section of Apalachia Valve House and Penstock



Apalachia Hydroelectric Project | Cherokee County, NC
Name of Property | County and State

Property Owner:

(This information will not be submitted to the National Park Service, but will remain on file at the Tennessee Historical Commission)

Name: Tennessee Valley Authority – Pat Ezzell

Street & Number: 400 West Summit Hill Drive 460WT7D-K Telephone: 865-632-6461

City or Town: Knoxville State/Zip: TN 37902

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Name of Property

County and State

Name of multiple property listing (if applicable)

Section number _____ Page _____

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 100001459 Date Listed: 10/26/2017

Property Name: Apalachia Hydroelectric project (TVA Hydroelectric System MPS)

County: Murphy and Reliance State: NC and TN

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

Signature of the Keeper

10-26-2017
Date of Action

Amended Items in Nomination:

Section 3: Level of Significance

This SLR is meant to clarify the level of significance for the property. The North Carolina SHPO certified the property at the National, State, and Local levels of significance and the Tennessee SHPO certified it at the Local level of significance.

The property has been accepted at the State and Local levels of significance for both jurisdictions, based on the overall effect of the power generating facility in the region covering both states.

The North Carolina and Tennessee SHPOs, and the TVA FPO have been notified of this amendment.

DISTRIBUTION:

National Register property file
Nominating Authority (without nomination attachment)