U.S. Hydropower Resource Assessment for Tennessee

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ABSTRACT

The U.S. Department of Energy is developing an estimate of the undeveloped hydropower potential in the United States. The Hydropower Evaluation Software (HES) is a computer model that was developed by the Idaho National Engineering Laboratory for this purpose. HES measures the undeveloped hydropower resources available in the United States, using uniform criteria for measurement. The software was developed and tested using hydropower information and data provided by the Southwestern Power Administration. It is a menu-driven program that allows the personal computer user to assign environmental attributes to potential hydropower sites, calculate development suitability factors for each site based on the environmental attributes present, and generate reports based on these suitability factors. This report describes the resource assessment results for the State of Tennessee.

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U.S. Hydropower Resource Assessment for Tennessee

INTRODUCTION

In June 1989, the U.S. Department of Energy initiated the development of a National Energy Strategy to identify the energy resources available to support the expanding demand for energy in the United States. Public hearings conducted as part of the strategy development process indicated that undeveloped hydropower resources were not well defined. As a result, the Department of Energy established an interagency Hydropower Resource Assessment Team to ascertain the undeveloped hydropower potential. In connection with these efforts by the Department of Energy, the Idaho National Engineering Laboratory designed the Hydropower Evaluation Software (HES), which has been used to perform a resource assessment of the undeveloped conventional hydropower potential in over 30 states. This report presents the results of the hydropower resource assessment for the State of Tennessee. Undeveloped pumped storage hydropower potential is not included.

The HES was developed as a tool to measure undeveloped hydropower potential regionally or by state. The software is not intended to provide precise development factors for individual sites, but to provide regional or state totals. Because the software was developed as a generic measurement tool encompassing national issues, regional and state totals must be considered judiciously; various local issues may skew undeveloped hydropower potential totals. The information for the resource assessment was compiled from the Federal Energy Regulatory Commission's Hydroelectric Power Resources Assessment database and several other sources. Refer to DOE/ID-10338, the *User's Manual* (Francfort, Matthews, Rinehart 1991) for the specifics of the software and to DOE/ID-10430.1, the *Status Report* (Conner, Francfort, Rinehart 1996) for an overview of all resource assessment activities to date.

Model Development

Hydropower Evaluation Software, both a probability-factor computer model and a database, is a menu-driven program that is intended to be user-friendly. Computer screens and report-generation capabilities were developed to meet the needs of users nationwide. The software uses environmental attribute data to generate an overall project environmental suitability factor (PESF) between 0.1 and 0.9, where 0.9 indicates the highest likelihood of development and 0.1 indicates the lowest likelihood of development. The suitability factors are dependant on the unique environmental attributes of each potential site. They reflect the considerations that (a) environmental concerns can make a potential site unacceptable, prohibiting its development (for a suitability factor of 0.1), or (b) if there are no environmental concerns, there is no negative effect on the likelihood of site development (for a suitability factor of 0.9). A combination of attributes can result in a lower suitability factor because multiple environmental considerations would reduce the likelihood that a site may be developed to its physical potential.

Model Goal

The goal of the HES is to assemble an accurate resource database of all sites with undeveloped hydropower potential in the United States for use as a planning tool to determine the viable national hydropower potential. Undeveloped hydropower potential is not limited to the development of new sites; it also includes the development of additional hydropower-generating capacity at sites that currently have hydropower, but are not developed to their full potential. This undeveloped hydropower potential is a source of nonpolluting, renewable energy available to meet the growing power needs of the United States. The HES should help make this goal obtainable and ensure a set of uniform criteria for national assessment.

Dam Status

The effects of environmental attributes vary by dam status. The dam status classifications used are as follows:

- W = Developed hydropower site with current power generation, but the total hydropower potential has not been fully developed. Only the undeveloped hydropower potential is discussed in this report.
- W/O = Developed site without current power generation. The site has some type of developed impoundment or diversion structure, but no developed hydropower generating capability.
- U = Undeveloped site. The site does not have power generation capability nor a developed impoundment or diversion structure.

ASSESSMENT RESULTS

Summary Results

A total of 22 sites (Table 1) have been identified and assessed for their undeveloped hydropower potential. The HES results for individual site capacities range from 9 kilowatts (kW) to 90 megawatts (MW). About one-half the

sites are less than 1 MW, three are micro sites less than 100 kW, and the other half or greater than 1 MW, one of which is an undeveloped site on the Mississippi River with an estimated potential capacity of 90 MW (Figure 1).

The nonmodeled undeveloped hydropower potential total for Tennessee was identified as 496 MW. The HES results lowers this estimate about 72% to 138 MW. The greatest reduction in undeveloped hydropower potential, by MW, occurs at sites with no current power generation capability nor impoundment or diversion structure in place (undeveloped category). These sites have an HES-modeled undeveloped hydropower potential of 128 MW, a 348 MW reduction in the estimated undeveloped hydropower potential (Figure 2). The number of sites does not change, only the identified undeveloped hydropower potential is reassessed (Figure 3). Figures 4 and 5 illustrate two historic dam sites in Tennessee, the Burgess Falls Dam and the Fairfield Mill Dam, neither of which produce power.

The 22 identified sites are located within 3 major river basins. The number of sites per major river basin ranges from 1 in the St. Francis River Basin to 16 in the Tennessee River Basin (Figure 6). The St. Francis River Basin, with only 1 identified site, has the most undeveloped hydropower potential, 90 MW or 65% of the total undeveloped hydropower potential, of the Tennessee river basins (Figure 7).

Table 1. Undeveloped hydropower potential summary for Tennessee. The table contains the nonmodeled undeveloped nameplate potential and the HES-modeled undeveloped potential totals.

	Number of projects	Nameplate potential (MW)	HES-modeled potential (MW)
With Power	0	0	0
W/O Power	11	20.0	10.0
Undeveloped	11	475.9	127.6
State Total	22	495.9	137.6

Figure 1. Number of sites, by capacity groups, with HES-modeled undeveloped hydropower potential.

Figure 2. The nonmodeled and HES-modeled undeveloped hydropower potential.

Figure 3. The number of sites with undeveloped hydropower potential and the total megawatts of HES-modeled undeveloped hydropower potential.

Figure 4. The Burgess Falls Dam in Putnam County, Tennessee. This dam produced power for Cookeville, Tennessee, before TVA was created in the 1930s. The dam is now in Burgess Falls State Natural Area. Concerns over its structural integrity may lead to its partial or total removal.

Figure 5. The Fairfield Mill Dam in Bedford County, Tennessee, was part of an old grist mill. A small power-generating station was added in the 1980s. The current owners gave up their license to produce power last year because it was uneconomical.

Figure 6. Number of sites with undeveloped hydropower potential in the Tennessee river basins.

Figure 7. Megawatts of HES-modeled undeveloped hydropower potential in the Tennessee river basins.

Detailed Results

The appendices contain, in the form of HES-generated reports, detailed information about the undeveloped hydropower potential in Tennessee. The appendices contain the following information:

Appendix A summarizes the undeveloped hydropower potential by dam status groups. The number of sites, nonmodeled undeveloped hydropower potential, and HES-modeled undeveloped hydropower potential is provided based on the dam status.

Appendix B provides the hydropower resource assessment by river basin, which includes the project number, project name, stream name, dam status, nonmodeled undeveloped hydropower potential, and the HES-modeled undeveloped hydropower potential for each site. Subtotals are provided for each river basin.

Appendix C lists the project numbers, plant name, stream name, if a site is Federally owned,

nonmodeled undeveloped hydropower potential, and HES-modeled undeveloped hydropower potential. The sites are grouped by dam status.

Appendix D contains a resource database list for the 22 sites in Tennessee. Information includes plant name, stream, state, county, river basin and owner names, project number, nameplate and HES-modeled undeveloped hydropower potential, the unit and plant types, dam status, latitude, longitude, and the environmental factors that the HES uses to determine the PESF.

OBTAINING INDIVIDUAL STATE INFORMATION

Additional copies of the hydropower resource assessment results for individual states are available and can be obtained by writing or calling the authors or the National Technical Information Service (NTIS).

Telephone Orders—(703) 487-4650.
NTIS sales desk and customer services are

available between 8:30 a.m. and 5:00 p.m., Eastern Standard Time.

Fax—(703) 321-8547. Customers may fax their orders to NTIS. These orders may be charged to a NTIS deposit account, American Express, VISA, or MasterCard.

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ADDITIONAL HYDROPOWER EVALUATION SOFTWARE INFORMATION

Additional information concerning the HES can be obtained by contacting Ben Rinehart or Jim Francfort at the addresses provided below. Copies of the software and the User's Manual may also be obtained from these individuals.

Ben Rinehart, Project Manager
Idaho National Engineering and Environmental Laboratory
P.O. Box 1625, MS 3830
Idaho Falls, ID 83415-3830
(208) 526-1002

Jim Francfort
Idaho National Engineering and Environmental Laboratory
P.O. Box 1625, MS 3875
Idaho Falls, ID 83415-3875
(208) 526-6787

Information concerning the State of Tennessee's involvement with the resource assessment or about the identified sites may be obtained by contacting:

Lyle Bentley
Division of Water Supply
Tennessee Department of Environment and Conservation
6th Floor, L&C Tower
401 Church Street
Nashville, TN 37243-1549
(615) 532-0154.

REFERENCES

Conner, A. M., J. E. Francfort, and B. N. Rinehart, 1996, *Uniform Criteria for U.S. Hydropower Resource Assessment, Hydropower Evaluation Software Status Report-II*, DOE/ID 10430.1, Idaho National Engineering Laboratory, Idaho Falls, Idaho.

Francfort, J. E., S. D. Matthews, and B. N. Rinehart, 1991, *Hydropower Evaluation Software User's Manual*, DOE/ID-10338, Idaho National Engineering Laboratory, Idaho Falls, Idaho.

Appendix A
Summary Report

DATE: 05/23/97

H Y D R O P O W E R C A P A C I T Y S U M M A R Y

<u>State</u>	<u>Category</u>	<u>Number of Projects</u>	<u>Name Plate Capacity (KW)</u>	<u>HES Adjusted Capacity (KW)</u>
TN	With Power	0	0	0
	W/O Power	11	20013	10016.50
	Undeveloped	11	475908	127598.80
	STATE TOTAL	22	495921	137615.30
TOTALS	With Power	0	0	0
	W/O Power	11	20013	10016.50
	Undeveloped	11	475908	127598.80
GRAND TOTAL		22	495921	137615.30

Appendix B
River Basins Report

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HYDROPOWER RESOURCE ASSESSMENT BY RIVER BASIN

FERC Number	Plant Name/ Stream	Dam Stat	Name Plate Rating (KW)	PESF	PESF * KW
** River Basin CUMBERLAND RIVER BASIN					
09189	DALE HOLLOW OBEY R	U	98.00	0.10	9.80
03617	WALTERHILL E FK STONES R	WO	508.00	0.50	254.00
10590	BURGESS FALLS FALLING WATER R	WO	635.00	0.50	317.50
07877	MCMINNVILLE BARREN FK R, ROCKY R	WO	280.00	0.50	140.00
10589	OLD FACTORY DAM (SPARTA) CALFKILLER R, CANEY FK	WO	600.00	0.50	300.00
** Subtotal **			2121.00		1021.30
** River Basin ST FRANCIS RIVER BASIN					
06994	H M BESSIE MISSISSIPPI R	U	100000.00	0.90	90000.00
** Subtotal **			100000.00		90000.00
** River Basin TENNESSEE RIVER BASIN					
TN001	COLUMBIA DUCK R	U	21780.00	0.10	2178.00
09434	WARTBURG CROOKED FK, EMORY R	U	1400.00	0.10	140.00
TN003	CUMBERLAND GAP POWELL R	U	71400.00	0.10	7140.00
TN004	WAR RIDGE CLINCH R	U	113300.00	0.10	11330.00
07624	RIVERDALE FRENCH BROAD R	U	40000.00	0.10	4000.00
TN005	LONG CREEK FRENCH BROAD R	U	86100.00	0.10	8610.00
07629	BEAVER CREEK HOLSTON R	U	30000.00	0.10	3000.00

HYDROPOWER RESOURCE ASSESSMENT BY RIVER BASIN

FERC Number	Plant Name/ Stream	Dam Stat	Name Plate Rating (KW)	PESF	PESF * KW
TN006	PINE CAMP ELK R	U	11820.00	0.10	1182.00
TN007	CANE CREEK S FK CANE CR, TENNESSEE R	U	10.00	0.90	9.00
11351	OLD COLUMBIA DUCK R	WO	800.00	0.50	400.00
10825	SHELBYVILLE DUCK R	WO	460.00	0.50	230.00
08746	FAIRFIELD MILL GARRISON FK, DUCK R	WO	40.00	0.75	30.00
TN002	NORMANDY DUCK R	WO	4250.00	0.50	2125.00
09443	SHOAL CREEK 1 SHOAL CR, TENNESSEE R	WO	300.00	0.50	150.00
09673	ELK RIVER ELK R	WO	1500.00	0.50	750.00
04443	NOLICHUCKY NOLICHUCKY R	WO	10640.00	0.50	5320.00
** Subtotal **			393800.00		46594.00
*** Total ***			495921.00		137615.30

Appendix C
Tennessee Sites List

HYDROPOWER RESOURCE ASSESSMENT BY FERC NUMBER

Plant Name/ Stream	ST	Dam Stat	Name Plate Rating (KW)	PESF	PESF * KW
** FERC Number 06994 H M BESSIE MISSISSIPPI R	TN	U	100000.00	0.90	90000.00
** Subtotal **			100000.00		90000.00
** FERC Number 07624 RIVERDALE FRENCH BROAD R	TN	U	40000.00	0.10	4000.00
** Subtotal **			40000.00		4000.00
** FERC Number 07629 BEAVER CREEK HOLSTON R	TN	U	30000.00	0.10	3000.00
** Subtotal **			30000.00		3000.00
** FERC Number 09189 DALE HOLLOW OBEY R	TN	U	98.00	0.10	9.80
** Subtotal **			98.00		9.80
** FERC Number 09434 WARTBURG CROOKED FK, EMORY R	TN	U	1400.00	0.10	140.00
** Subtotal **			1400.00		140.00
** FERC Number TN001 COLUMBIA DUCK R	TN	U	21780.00	0.10	2178.00
** Subtotal **			21780.00		2178.00
** FERC Number TN003 CUMBERLAND GAP POWELL R	TN	U	71400.00	0.10	7140.00

HYDROPOWER RESOURCE ASSESSMENT BY FERC NUMBER

Plant Name/ Stream	ST	Dam Stat	Name Plate Rating (KW)	PESF	PESF * KW
** Subtotal **			71400.00		7140.00
** FERC Number TN004 WAR RIDGE CLINCH R	TN	U	113300.00	0.10	11330.00
** Subtotal **			113300.00		11330.00
** FERC Number TN005 LONG CREEK FRENCH BROAD R	TN	U	86100.00	0.10	8610.00
** Subtotal **			86100.00		8610.00
** FERC Number TN006 PINE CAMP ELK R	TN	U	11820.00	0.10	1182.00
** Subtotal **			11820.00		1182.00
** FERC Number TN007 CANE CREEK S FK CANE CR, TENNESSEE R	TN	U	10.00	0.90	9.00
** Subtotal **			10.00		9.00
** FERC Number 03617 WALTERHILL E FK STONES R	TN	WO	508.00	0.50	254.00
** Subtotal **			508.00		254.00
** FERC Number 04443 NOLICHUCKY NOLICHUCKY R	TN	WO	10640.00	0.50	5320.00
** Subtotal **			10640.00		5320.00

HYDROPOWER RESOURCE ASSESSMENT BY FERC NUMBER

Plant Name/ Stream	Dam ST Stat	Name Plate Rating (KW)	PESF	PESF * KW
** FERC Number 07877 MCMINNVILLE BARREN FK R, ROCKY R	TN WO	280.00	0.50	140.00
** Subtotal **		280.00		140.00
** FERC Number 08746 FAIRFIELD MILL GARRISON FK, DUCK R	TN WO	40.00	0.75	30.00
** Subtotal **		40.00		30.00
** FERC Number 09443 SHOAL CREEK 1 SHOAL CR, TENNESSEE R	TN WO	300.00	0.50	150.00
** Subtotal **		300.00		150.00
** FERC Number 09673 ELK RIVER ELK R	TN WO	1500.00	0.50	750.00
** Subtotal **		1500.00		750.00
** FERC Number 10589 OLD FACTORY DAM (SPARTA) CALFKILLER R, CANEY FK	TN WO	600.00	0.50	300.00
** Subtotal **		600.00		300.00
** FERC Number 10590 BURGESS FALLS FALLING WATER R	TN WO	635.00	0.50	317.50
** Subtotal **		635.00		317.50
** FERC Number 10825 SHELBYVILLE DUCK R	TN WO	460.00	0.50	230.00

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HYDROPOWER RESOURCE ASSESSMENT BY FERC NUMBER

Plant Name/ Stream	ST	Dam Stat	Name Plate Rating (KW)	PESF	PESF * KW
** Subtotal **			460.00		230.00
** FERC Number 11351 OLD COLUMBIA DUCK R	TN	WO	800.00	0.50	400.00
** Subtotal **			800.00		400.00
** FERC Number TN002 NORMANDY DUCK R	TN	WO	4250.00	0.50	2125.00
** Subtotal **			4250.00		2125.00
*** Total ***			495921.00		137615.30

Appendix D

Individual Resource Database List

RESOURCE DATABASE LISTING

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FERC Number	Plant Name	Stream	State Name
03617	WALTERHILL	E FK STONES R	TN

County Name	River Basin
RUTHERFORD	CUMBERLAND RIVER BASIN

Class	Owner Name
M	CITY OF MURFREESBORO

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
508.00	0.50	254.00	2100.00	1050

Unit Type	Plant Type	Project Status	Dam Status	Latitude	3556.00	Longitude	8623.00
C	ROR	XX	WO				

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value	Y	0.75
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish	Y	0.75
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife	Y	0.75
Cultural Value	Y	0.75	Federal Land Code 103		0.90
Fish Presence Value	Y	0.75	Federal Land Code 104		0.90
Geologic Value	Y	0.90	Federal Land Code 105		0.90
Historic Value	Y	0.75	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.75	Federal Land Code 108		0.90
Scenic Value	Y	0.90	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
04443	NOLICHUCKY	NOLICHUCKY R	TN

County Name	River Basin
GREENE	TENNESSEE RIVER BASIN

Class	Owner Name
F	TENNESSEE VALLEY AUTHORITY

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
10640.00	0.50	5320.00	50000.00	25000

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3604.00 8252.00
C	RES	XX	WO		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value		0.90
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife		0.90
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.75	Federal Land Code 104		0.90
Geologic Value		0.90	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.75	Federal Land Code 108	Y	0.75
Scenic Value		0.90	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
06994	H M BESSIE	MISSISSIPPI R	TN

County Name	River Basin
LAKE	ST FRANCIS RIVER BASIN

Class	Owner Name
M	MEMPHIS, CITY OF

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
100000.00	0.90	90000.00	641000.00	576900

Unit Type	Plant Type	Project Status	Dam Status	Latitude	3627.00
C	ROR	XX	U	Longitude	89.00

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection	0.90		Wildlife Value	0.90	
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish	0.90	
Wild/Scenic Location	0.90		Threatened/Endangered Wildlife	0.90	
Cultural Value	0.90		Federal Land Code 103	0.90	
Fish Presence Value	0.90		Federal Land Code 104	0.90	
Geologic Value	0.90		Federal Land Code 105	0.90	
Historic Value	0.90		Federal Land Code 106	0.90	
Other Value	0.90		Federal Land Code 107	0.90	
Recreation Value	0.90		Federal Land Code 108	0.90	
Scenic Value	0.90		Federal Land Code 198	0.90	

RESOURCE DATABASE LISTING

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FERC Number	Plant Name	Stream	State Name
07624	RIVERDALE	FRENCH BROAD R	TN

County Name	River Basin
KNOX	TENNESSEE RIVER BASIN

Class	Owner Name
R	INDEPENDENCE ELEC CORP

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
40000.00	0.10	4000.00	133000.00	13300

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3556.00 8345.00
C	ROR	XX	U		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection	Y	0.10	Wildlife Value	Y	0.25
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish	Y	0.50
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife	Y	0.50
Cultural Value	Y	0.50	Federal Land Code 103		0.90
Fish Presence Value	Y	0.25	Federal Land Code 104		0.90
Geologic Value	Y	0.50	Federal Land Code 105		0.90
Historic Value	Y	0.50	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.25	Federal Land Code 108		0.90
Scenic Value	Y	0.50	Federal Land Code 198		0.90

RESOURCE DATABASE LISTING

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FERC Number	Plant Name	Stream	State Name
07629	BEAVER CREEK	HOLSTON R	TN

County Name	River Basin
GRAINGER	TENNESSEE RIVER BASIN

Class	Owner Name
R	INDEPENDENCE ELEC CORP

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
30000.00	0.10	3000.00	107000.00	10700

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3606.00 8338.00
C	ROR	XX	U		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection	Y	0.10	Wildlife Value	Y	0.25
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish	Y	0.50
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife	Y	0.50
Cultural Value	Y	0.50	Federal Land Code 103		0.90
Fish Presence Value	Y	0.25	Federal Land Code 104		0.90
Geologic Value	Y	0.50	Federal Land Code 105		0.90
Historic Value	Y	0.50	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.25	Federal Land Code 108		0.90
Scenic Value	Y	0.50	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
07877	MCMINNVILLE	BARREN FK R, ROCKY R	TN

County Name	River Basin
WARREN	CUMBERLAND RIVER BASIN

Class	Owner Name
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R	CITY OF MCMINNVILLE
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Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
280.00	0.50	140.00	1400.00	700

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3540.00 8547.00
C	ROR	XX	WO		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value		0.90
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife Y		0.75
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.75	Federal Land Code 104		0.90
Geologic Value		0.90	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value		0.90	Federal Land Code 108		0.90
Scenic Value		0.90	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
08746	FAIRFIELD MILL	GARRISON FK, DUCK R	TN

County Name	River Basin
BEDFORD	TENNESSEE RIVER BASIN

Class	Owner Name
R	HICKERSON, LOGAN

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
40.00	0.75	30.00	150.00	112.50

Unit Type	Plant Type	Project Status	Dam Status	Latitude	3533.00	Longitude	8617.00
C	ROR	XX	WO				

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection	0.90		Wildlife Value		0.90
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish	Y	0.75
Wild/Scenic Location	0.90		Threatened/Endangered Wildlife		0.90
Cultural Value	0.90		Federal Land Code 103		0.90
Fish Presence Value	0.90		Federal Land Code 104		0.90
Geologic Value	0.90		Federal Land Code 105		0.90
Historic Value	0.90		Federal Land Code 106		0.90
Other Value	0.90		Federal Land Code 107		0.90
Recreation Value	0.90		Federal Land Code 108		0.90
Scenic Value	0.90		Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
09189	DALE HOLLOW	OBEY R	TN

County Name	River Basin
CLAY	CUMBERLAND RIVER BASIN

Class	Owner Name
R	JDJ ENERGY CO

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
98.00	0.10	9.80	772.00	77.20

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3632.00 8528.00
C	ROR	XX	U		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection	Y	0.10	Wildlife Value	Y	0.25
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife	Y	0.50
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.25	Federal Land Code 104		0.90
Geologic Value	Y	0.50	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.25	Federal Land Code 108	Y	0.50
Scenic Value	Y	0.50	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
09434	WARTBURG	CROOKED FK, EMORY R	TN

County Name	River Basin
MORGAN	TENNESSEE RIVER BASIN

Class	Owner Name
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R	CAREX HYDRO
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Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
1400.00	0.10	140.00	7000.00	700

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3604.00 8435.00
C	ROR	XX	U		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection	Y	0.10	Wildlife Value	Y	0.25
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife		0.90
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.25	Federal Land Code 104		0.90
Geologic Value	Y	0.50	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106	Y	0.10
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.25	Federal Land Code 108		0.90
Scenic Value	Y	0.50	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
09443	SHOAL CREEK 1	SHOAL CR, TENNESSEE R	TN

County Name	River Basin
LAWRENCE	TENNESSEE RIVER BASIN

Class	Owner Name
M	CITY OF LAWRENCEBURG

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
300.00	0.50	150.00	1100.00	550

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3513.00 8722.00
C	ROR	XX	WO		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value		0.90
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife		0.90
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.75	Federal Land Code 104		0.90
Geologic Value		0.90	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.75	Federal Land Code 108		0.90
Scenic Value	Y	0.90	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
09673	ELK RIVER	ELK R	TN

County Name	River Basin
FRANKLIN	TENNESSEE RIVER BASIN

Class	Owner Name
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F	ARNOLD ENGINEERING DEVELOPMENT CENT
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Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
1500.00	0.50	750.00	6927.00	3463.50

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude
C	ROR	XX	WO	3518.00 8606.00

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value	Y	0.75
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife	Y	0.75
Cultural Value	Y	0.75	Federal Land Code 103		0.90
Fish Presence Value	Y	0.75	Federal Land Code 104		0.90
Geologic Value		0.90	Federal Land Code 105		0.90
Historic Value	Y	0.75	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.75	Federal Land Code 108		0.90
Scenic Value	Y	0.90	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
10589	OLD FACTORY DAM(SPARTA)	CALFKILLER R,CANEY FK	TN

County Name	River Basin
WHITE	CUMBERLAND RIVER BASIN

Class	Owner Name
M	CITY OF SPARTA

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
600.00	0.50	300.00	1500.00	750

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3555.00 8529.00
C	ROR	XX	WO		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value	Y	0.75
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife	Y	0.75
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.75	Federal Land Code 104		0.90
Geologic Value	Y	0.90	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.75	Federal Land Code 108		0.90
Scenic Value	Y	0.90	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
10590	BURGESS FALLS	FALLING WATER R	TN

County Name	River Basin
PUTNAM	CUMBERLAND RIVER BASIN

Class	Owner Name
M	STATE OF TENNESSEE

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
635.00	0.50	317.50	1500.00	750

Unit Type	Plant Type	Project Status	Dam Status	Latitude	3602.00	Longitude	8535.00
C	ROR	XX	WO				

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value	Y	0.75
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish	Y	0.75
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife		0.90
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.75	Federal Land Code 104		0.90
Geologic Value	Y	0.90	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.75	Federal Land Code 108		0.90
Scenic Value	Y	0.90	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
10825	SHELBYVILLE	DUCK R	TN

County Name	River Basin
BEDFORD	TENNESSEE RIVER BASIN

Class	Owner Name
M	CITY OF SHELBYVILLE

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
460.00	0.50	230.00	1800.00	900

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3529.00 8628.00
C	ROR	XX	WO		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value		0.90
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife Y		0.75
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.75	Federal Land Code 104		0.90
Geologic Value		0.90	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.75	Federal Land Code 108		0.90
Scenic Value		0.90	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
11351	OLD COLUMBIA	DUCK R	TN

County Name	River Basin
MAURY	TENNESSEE RIVER BASIN

Class	Owner Name
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M	CITY OF COLUMBIA
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Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
800.00	0.50	400.00	4000.00	2000

Unit Type	Plant Type	Project Status	Dam Status	Latitude	3535.00	Longitude	8701.00
C	ROR	NO	WO				

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value		0.90
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife Y		0.75
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.75	Federal Land Code 104		0.90
Geologic Value		0.90	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.75	Federal Land Code 108		0.90
Scenic Value	Y	0.90	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
TN001	COLUMBIA	DUCK R	TN

County Name	River Basin
MAURY	TENNESSEE RIVER BASIN

Class	Owner Name
F	TENNESSEE VALLEY AUTH

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
21780.00	0.10	2178.00	52750.00	5275

Unit Type	Plant Type	Project Status	Dam Status	Latitude	3536.00
C	ROR		U	Longitude	8700.00

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value		0.90
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife Y		0.50
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.25	Federal Land Code 104		0.90
Geologic Value		0.90	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.25	Federal Land Code 108		0.90
Scenic Value	Y	0.50	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
TN002	NORMANDY	DUCK R	TN

County Name	River Basin
COFFEE	TENNESSEE RIVER BASIN

Class	Owner Name
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F	TENNESSEE VALLEY AUTH
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Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
4250.00	0.50	2125.00	11900.00	5950

Unit Type	Plant Type	Project Status	Dam Status	Latitude	3528.00
				Longitude	8615.00
C	RES		WO		

Factor	Exist Prob	Factor	Exist Prob
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Wild/Scenic Protection	0.90	Wildlife Value	0.90
Wild/Scenic Tributary or Upstream/Downstream		Threatened/Endangered Fish	0.90
Wild/Scenic Location	0.90	Threatened/Endangered Wildlife Y	0.75
Cultural Value	0.90	Federal Land Code 103	0.90
Fish Presence Value	Y 0.75	Federal Land Code 104	0.90
Geologic Value	0.90	Federal Land Code 105	0.90
Historic Value	0.90	Federal Land Code 106	0.90
Other Value	0.90	Federal Land Code 107	0.90
Recreation Value	Y 0.75	Federal Land Code 108	0.90
Scenic Value	Y 0.90	Federal Land Code 198	0.90

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FERC Number	Plant Name	Stream	State Name
TN003	CUMBERLAND GAP	POWELL R	TN

County Name	River Basin
CLAIBORNE	TENNESSEE RIVER BASIN

Class	Owner Name
F	TENNESSEE VALLEY AUTH

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
71400.00	0.10	7140.00	117100.00	11710

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3633.00 8338.00
C	ROR		U		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection	Y	0.10	Wildlife Value	Y	0.25
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife	Y	0.50
Cultural Value	Y	0.50	Federal Land Code 103		0.90
Fish Presence Value	Y	0.25	Federal Land Code 104		0.90
Geologic Value	Y	0.50	Federal Land Code 105		0.90
Historic Value	Y	0.50	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.25	Federal Land Code 108		0.90
Scenic Value	Y	0.50	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
TN004	WAR RIDGE	CLINCH R	TN

County Name	River Basin
CLAIBORNE	TENNESSEE RIVER BASIN

Class	Owner Name
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F	TENNESSEE VALLEY AUTH
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Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
113300.00	0.10	11330.00	209400.00	20940

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3625.00 8326.00
C	STG		U		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value	Y	0.25
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife	Y	0.50
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.25	Federal Land Code 104		0.90
Geologic Value	Y	0.50	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.25	Federal Land Code 108		0.90
Scenic Value	Y	0.50	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
TN005	LONG CREEK	FRENCH BROAD R	TN

County Name	River Basin
COCKE	TENNESSEE RIVER BASIN

Class	Owner Name
F	TENNESSEE VALLEY AUTH

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
86100.00	0.10	8610.00	217500.00	21750

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3557.00 8304.00
C	STG		U		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection	Y	0.10	Wildlife Value	Y	0.25
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife		0.90
Cultural Value	Y	0.50	Federal Land Code 103		0.90
Fish Presence Value	Y	0.25	Federal Land Code 104	Y	0.50
Geologic Value	Y	0.50	Federal Land Code 105		0.90
Historic Value	Y	0.50	Federal Land Code 106		0.90
Other Value	Y	0.50	Federal Land Code 107		0.90
Recreation Value	Y	0.25	Federal Land Code 108		0.90
Scenic Value	Y	0.50	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
TN006	PINE CAMP	ELK R	TN

County Name	River Basin
CARTER	TENNESSEE RIVER BASIN

Class	Owner Name
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F	TENNESSEE VALLEY AUTH
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Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
11820.00	0.10	1182.00	32400.00	3240

Unit Type	Plant Type	Project Status	Dam Status	Latitude Longitude	3613.00 8158.00
C	DIV		U		

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection		0.90	Wildlife Value		0.90
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish		0.90
Wild/Scenic Location		0.90	Threatened/Endangered Wildlife		0.90
Cultural Value		0.90	Federal Land Code 103		0.90
Fish Presence Value	Y	0.25	Federal Land Code 104	Y	0.50
Geologic Value		0.90	Federal Land Code 105		0.90
Historic Value		0.90	Federal Land Code 106		0.90
Other Value		0.90	Federal Land Code 107		0.90
Recreation Value	Y	0.25	Federal Land Code 108		0.90
Scenic Value	Y	0.50	Federal Land Code 198		0.90

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FERC Number	Plant Name	Stream	State Name
TN007	CANE CREEK	S FK CANE CR, TENNESSEE R	TN

County Name	River Basin
LEWIS	TENNESSEE RIVER BASIN

Class	Owner Name
R	WHITEHEAD, DEBRA

Name Plate Rating (KW)	PESF	PESF*KW	Annual Energy Rating (MWh)	PESF Annual Energy Rating (MWh)
10.00	0.90	9.00	44.00	39.60

Unit Type	Plant Type	Project Status	Dam Status	Latitude	3537.00	Longitude	8737.00
C	ROR		U				

Factor	Exist	Prob	Factor	Exist	Prob
Wild/Scenic Protection	0.90		Wildlife Value	0.90	
Wild/Scenic Tributary or Upstream/Downstream			Threatened/Endangered Fish	0.90	
Wild/Scenic Location	0.90		Threatened/Endangered Wildlife	0.90	
Cultural Value	0.90		Federal Land Code 103	0.90	
Fish Presence Value	0.90		Federal Land Code 104	0.90	
Geologic Value	0.90		Federal Land Code 105	0.90	
Historic Value	0.90		Federal Land Code 106	0.90	
Other Value	0.90		Federal Land Code 107	0.90	
Recreation Value	0.90		Federal Land Code 108	0.90	
Scenic Value	0.90		Federal Land Code 198	0.90	