

***Water Resources Regional
Planning Pilot Study
For
North Central Tennessee***

Phase I

May 28, 2009



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Presentation Outline

- **Scope of Studies**
- **Schedule and Cost**
- **Areas of Study**
- **Water Demand, Use, and Waste Water Use**



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Scope of Studies

The purpose of this study phase was to:

- **Document existing water source information, use, and demand for study areas**
- **Document existing water and wastewater system information**
- **Develop GIS database**
- **Develop a scope of work for the next phase**



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Tasks Accomplished

- **General water resource use information within the planning region has been compiled**
- **Existing studies within planning region have been identified**
- **Data has been collected to establish a GIS database**
- **Existing source yield data is being collected**
- **Final report has been produced**

Available at:

<ftp://ftp.usace.army.mil/pub/lrn/StateofTNWaterSupply/>



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Schedule

- **SEPT 2008**
Sign cost sharing and agreement
- **OCT 2008**
Funding Received
- **Nov 2008**
Project Steering team met to discuss implementation plans
- **JAN 2009**
Preliminary report
- **FEB 2009**
Draft presentation for Sponsor/Corps input
- **MARCH 2009**
Report complete



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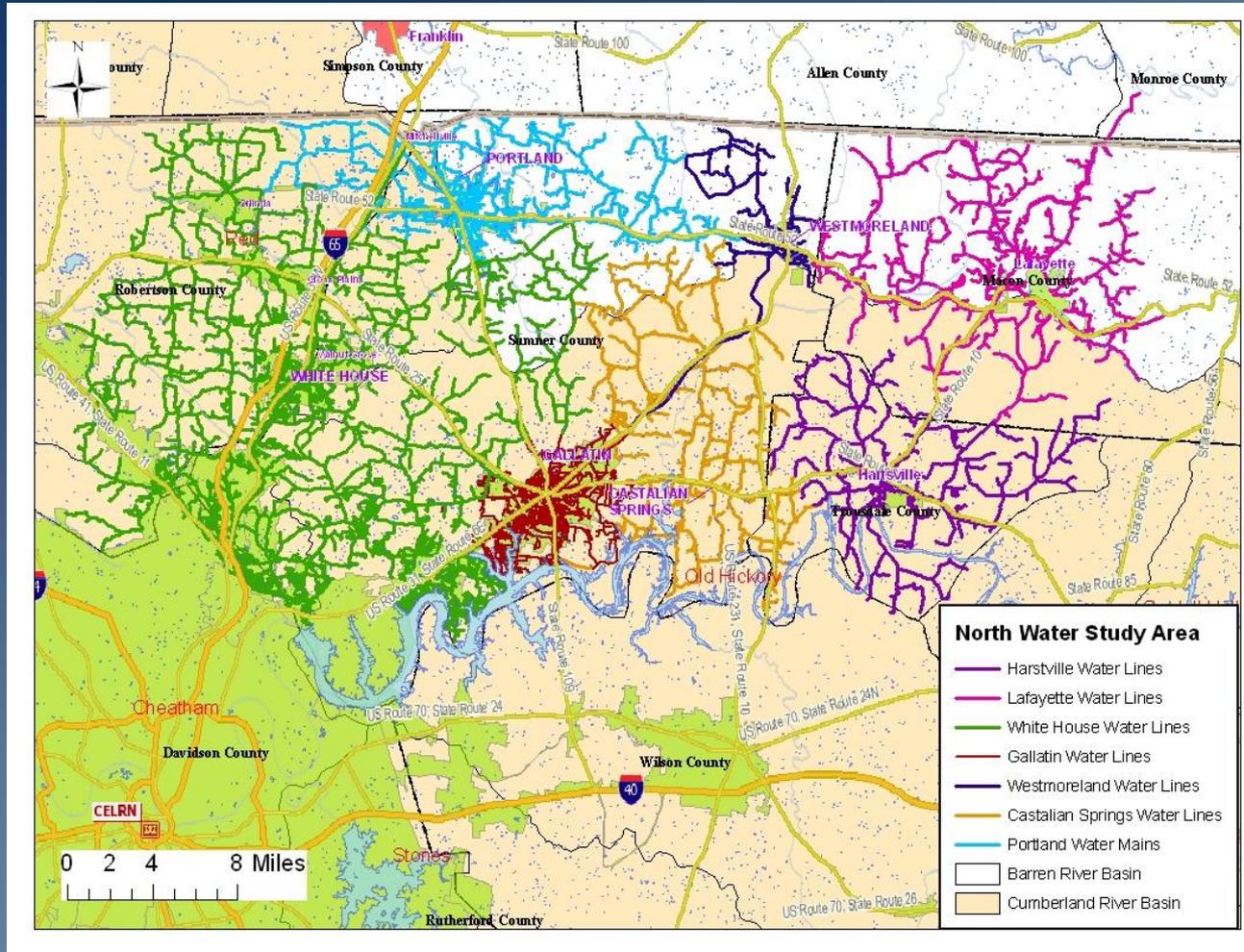
North Central TN Study Area

- **Portland**
- **Westmoreland**
- **Castalian Springs**
- **White House**
- **Hartsville/Trousdale**
- **Lafayette**



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North Central TN Area





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North Central TN Water Sources

- **Cumberland River/Old Hickory Lake**
- **Whites Spring & Adams Spring**
- **Barren River**
- **West Fork Drakes Creek**
- **Portland City Lake**



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North Central TN Water Sources

Utility	Water Supply Source	Storage Capacity (MG)
Gallatin	Cumberland River- Old Hickory Lake	152,000
Hartsville	Cumberland River- Old Hickory Lake	-
Lafayette	Whites Spring (Primary), Adams Spring (Secondary), Barren River (Emergency)	-
Portland	West Fork Drakes Creek (Primary)	-
	Portland City Lake (Emergency)	115.7
White House	Cumberland River- Old Hickory Lake	152,000



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Portland: West Fork Drakes Creek – Primary Intake





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Portland City Lake – Emergency Intake





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Lafayette: Whites Spring – Primary Intake



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Lafayette: Adams Spring – Secondary Intake





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Lafayette: Barren River – Emergency Intake



09/06/2007



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Gallatin: Cumberland River/Old Hickory Lake Intake





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Hartsville/Trousdale Cumberland River Intake





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White House: Old Hickory Lake Intake





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North Central TN Water Use

WATER SYSTEMS	TREATMENT PLANT CAPACITY (MGD)	SOURCES/BUYERS/SUPPLIERS	AVERAGE WITHDRAWAL (MGD)	WATER PURCHASED (MGD)	WATER SOLD (MGD)	GROSS WATER USE (MGD)
Castalian Springs-Bethpage U.D.	-	Gallatin (seller)	-	0.861	-	0.895
		Hartsville (seller)	-	0.0167	-	
		Westmoreland (seller)	-	0.0174	-	
Gallatin	16.1	Cumberland-Old Hickory Lake	7	-	-	5.7
		Castalian Springs/Bethpage (buyer)	-	-	0.861	
		Westmoreland (buyer)	-	-	0.4	
		White House (summer buyer)	-	-	-	
Hartsville/Trousdale	1.7	Cumberland River	0.9	-	-	0.845
		Castalian Springs/Bethpage (buyer)	-	-	0.0167	
		South Side U.D. (buyer)	-	-	0.0284	
		Cordell Hull U.D. (buyer)	-	-	0.01	



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North Central TN Water Use

WATER SYSTEMS	TREATMENT PLANT CAPACITY (MGD)	SOURCES/BUYERS/SUPPLIERS	AVERAGE WITHDRAWAL (MGD)	WATER PURCHASED (MGD)	WATER SOLD (MGD)	GROSS WATER USE (MGD)
Lafayette*	2.4	Whites Spring	1	-	-	1.3
		Adams Spring	0.3	-	-	
		Barren River (emergency)	-	-	-	
Portland	3	Portland City Lake	0.5 (2 months per year)	-	-	2
		West Fork Drakes Creek	2 (10 months per year), 1.5 (2 months per year)	-	-	
Westmoreland	-	Gallatin (seller)	-	0.4	-	0.383
		Castalian Springs/Bethpage (buyer)	-	-	0.0167	
White House	20	Old Hickory Lake	10	-	-	10
		Gallatin (seller)	-	1 (summer)	-	
		Springfield (seller)	-	0.25 (summer)	-	

* Lafayette has emergency connections to Westmoreland and Hartsville; Table does not show all emergency connections between utilities



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North Central TN Water System Connections

Utility Districts	Connection Size
Gallatin & Castalian Springs	4"
Gallatin & Westmoreland	10"
Gallatin & White House	6"
Portland & White House	6"
Portland & Westmoreland	4"
Hartsville & Lafayette	6"
Hartsville & Castalian Springs	3"
Lafayette & Westmoreland	6"
Castalian Springs & Westmoreland	6"



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North Central TN Inter-Basin Transfer Permits

Utility District	Originating Watershed	Receiving Watershed	Quantity Permitted (MGD)
Gallatin U.D.	Lower Cumberland River	Barren River	0.75
Lafayette U.D.	Barren River	Upper Cumberland River	0.25
White House U.D.	Lower Cumberland River	Barren River	1.751



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North Central TN Water Demand

Utility	Approx. Pop. Served	# of Accounts	Residential Accounts	Commercial Accounts	Industrial Accounts	Other Accounts	Avg. Quantity of Water Billed (MGD)	Estimate of Water Losses ²
Castalian Springs/ Bethpage	9958	3772	-	-	-	-	0.66	26%
Gallatin	27247	13,164	11353	1270	-	541	5.3	7%
Hartsville	7140	2800	-	-	-	-	0.55	35%
Lafayette	12462	5941	5442	480	17	2	1	20%
Portland	16005	6613	6109	50	454	-	1.4	30%
Westmoreland	3450	1480	1327	118	1	-	0.29	30%
White House	76464	28671	27,505	1045	38	83 (Government)	7.5	32%



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Self Supplied Water Use

Utility	Approx. Population of Service Area ¹	Approx. Population Served ¹	Self Supplied Water Users	Avg. Household Size ¹	Potential New Residential Accounts	Self Supplied Water Use (GPD) ²
Castalian Springs/ Bethpage	20,040	9,958	10,082	2.64	3,819	604,920
Gallatin	27,247	27,247	0	2.4	0	0
Hartsville	11,528	7,140	4,388	2.55	1,721	263,280
Lafayette	19,444	12,462	6,982	2.29	3,049	418,920
Portland	20,824	16,005	4,819	2.62	1,839	289,140
Westmoreland	5,646	3,450	2,196	2.6	845	131,760
White House	102,229	76,464	25,835	2.78	9,293	1,550,100

1 Data derived from US 2000 Census

2 Data derived using an average water use of 60 gallons per person per day



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North Central TN Waste Water Data

Utility	Existing Capacity of WW Treatment (mgd)	# Sewer Customers	Method of Discharge	Location of WWTP	Location of Discharge	Avg. Discharge (mgd)
Castalian Springs/Bethpage	-	-	-	-	-	-
Gallatin	11.5	10518	Direct Discharge	Lock 4 Road	Cumberland River	5.25
Hartsville	0.75	750	Direct Discharge	20 Waterplant Ln.	Cumberland River	0.3
Lafayette	4.5	2200	Direct Discharge	683 Bradley Hollow Rd.	Town Creek	0.7
Portland	3.8	3692	Direct Discharge	122A Morningside Dr.	Sumner Branch	1.9
Westmoreland	0.3	847	Direct Discharge	City Park Rd.	Little Trammel Creek	0.25
White House	0.04	2500	Pumped to Gallatin and/or Nashville	-	-	0.018



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Existing Water Supply Studies for North Central TN Study Area

- The City of Portland produced a preliminary engineering report of the Caney Fork Creek Reservoir Project prepared by Stephen L. Whiteside, P.E. on April 2006.
- U.S. Army Corps of Engineers, Nashville District, conducted a Water Supply Study of Metropolitan Nashville and the ten county region surrounding Nashville that was prepared by Roy F. Weston, Inc. on September 1979.
- 2008 State Revolving Fund Program, Phase 1 – Water Expansion Project for City of Lafayette, Prepared by Professional Engineering Services, Inc. on May 2008.
- Hartsville/Trousdale Co. Water & Sewer Department New Water Treatment Plant Development Project, Prepared by Barge Waggoner Sumner & Cannon, Inc. on February 17, 2009.
- U.S. Geological Survey prepared a ground-water resources report titled “Ground-Water Resources in the Metropolitan Region of Nashville, Tennessee” for use in the ten county study area. It was prepared by Don R. Rima and Patricia L. Goddard of the USGS in 1979.



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Phase II Scope of Work

- **Critical regional drought identification**
- **Completion of existing water source yield analysis**
- **Water demand projections**
- **Determination of alternative water sources**
- **Alternative water source yield analysis**
- **Identification of water demand management opportunities**
- **Coordination of public notice and public comment opportunities**



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Proposed Geographic Area of Phase II

- **North Central TN**
 - **Castalian Springs/Bethpage**
 - **Gallatin**
 - **Portland**
 - **Westmoreland**
 - **White House**



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Discussion/Questions

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