

# Water-Resource Development: A Strategic Plan

*Summary of Water Systems*

*FIVCO Area Development District*

*Water Resources Development Commission*

*October, 1999*

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## FIVCO AREA DEVELOPMENT DISTRICT

P.O. Box 636  
3000 Louisa Street  
Catlettsburg, Ky 41129  
(606) 739-5191

### REGIONAL OVERVIEW

#### (FIVCO ADD Existing & Proposed Water Lines Map)

- Estimated 1999 population of 134,000--81% on public water
- Estimated 2020 population of 133,000--85% on public water
- 1,520 miles of water lines, with plans for 410 additional miles
- Estimated funding needs for public water 2000-2005--\$53,835,000
- Estimated funding needs for public water 2006-2020--\$19,942,000

The FIVCO Area Development District region had an estimated population of 133,731 (53,885 households) in 1999 with a projected population of 133,011 (58,213 households) in 2020. There are 1,520 miles of water lines in the region serving 108,000 people, or 81% of the region's population. 410 miles of proposed water line extensions for the period 2000-2020 would provide service to an additional 2,964 households. Over 25,000 people in the region rely on private domestic water systems: 23,700 on wells, and 1,300 on hauled water and other sources.

Estimated populations and public water service for the five counties in the region is given below:

<b>County</b>	<b>1999 Pop</b>	<b>On Public</b>	<b>2020 Pop</b>	<b>On Public</b>
Boyd	48,000	45,600 (95%)	43,400	42,500 (98%)
Carter	26,700	22,700 (85%)	30,000	28,500 (95%)
Elliott	6,500	2,300 (35%)	6,300	3,150 (50%)
Greenup	36,800	31,300 (85%)	35,500	32,000 (90%)
Lawrence	15,700	6,300 (40%)	17,800	7,500 (42%)
<i>Region</i>	<i>134,000</i>	<i>108,000 (81%)</i>	<i>133,000</i>	<i>114,000 (85%)</i>

26 public and semi-public water systems serve the region: 20 community systems--11 municipal, 7 water districts, 2 private; and 6 non-community systems. There are 3 small (501

# EXISTING & PROPOSED WATER LINES

FIVCO  
Kentucky

Prepared By:  
Water Resource Development Commission

Department for Local Government  
1024 Capital Center Drive, Suite 340  
Frankfort, Kentucky 40601-8204  
502-573-2382 -- 502-573-2939 fax  
<http://dlgnt1.state.ky.us/wrdc/>

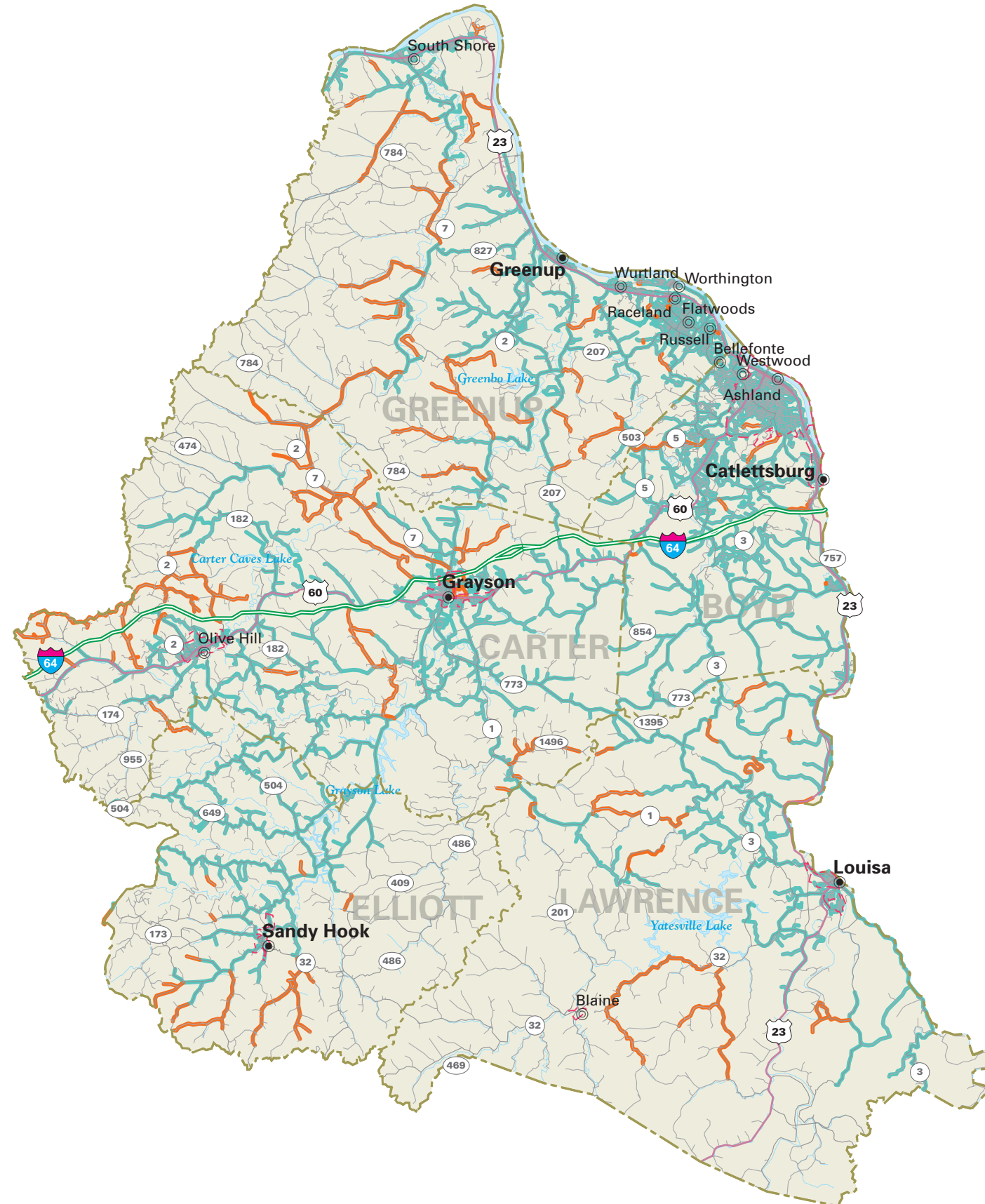
Bob Arnold, Chairman  
Lawrence Wetherby, Executive Director



Final GIS & Cartographic Operations By:  
Kent Amness & Kim Prough

Data Collection & GIS Input By:  
Kentucky Area Development Districts



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**WATER LINES**  
 Existing Water Lines  
 Proposed Water Lines

to 3,300 people served) community systems and 1 very small (500 or fewer people served) community systems.

Estimated costs for public water expansions and associated system upgrades are:

**Estimated Costs - Proposed Projects, 2000-2005**

COUNTY/System	Miles	New Customers Number	Cost in \$1000	Rehab in \$1000	Source in \$1000	Treatment in \$1000	Tanks/Pumps in \$1000	Total in \$1000
<b>BOYD</b>								-
Ashland				300				300
Cannonsburg								-
Big Sandy/Lawrence								-
Big Sandy W/D								-
Overland (private)	1	8	35					35
<b>Total</b>	<b>1</b>	<b>8</b>	<b>35</b>	<b>300</b>				<b>335</b>
								-
<b>CARTER</b>								-
Grayson	29	275	1,400			8,000	600	10,000
Olive Hill				500	6,000			6,500
Rattlesnake Ridge W/D						8,000	2,400	10,400
<b>Total</b>	<b>29</b>	<b>275</b>	<b>1,400</b>	<b>500</b>	<b>6,000</b>	<b>16,000</b>	<b>3,000</b>	<b>26,900</b>
								-
<b>ELLIOTT</b>								-
Sandy Hook W/D	47	429	1,700		3,000	4,000	600	9,300
<b>Total</b>	<b>47</b>	<b>429</b>	<b>1,700</b>		<b>3,000</b>	<b>4,000</b>	<b>600</b>	<b>9,300</b>
								-
<b>GREENUP</b>								-
Flatwood W/D								-
Raceland	9	72	400	500			300	1,200
Russell				2,000		8,000	500	10,500
South Shore (private)					2,000			2,000
Worthington								-
Wurtland					2,000		300	2,300
<b>Total</b>	<b>9</b>	<b>72</b>	<b>400</b>	<b>2,500</b>	<b>4,000</b>	<b>8,000</b>	<b>1,100</b>	<b>16,000</b>
								-
<b>LAWRENCE</b>								-
Lawrence Co. W/D	25	184	1,000				300	1,300
Louisa								-
<b>Total</b>	<b>25</b>	<b>184</b>	<b>1,000</b>				<b>300</b>	<b>1,300</b>
								-
<b>FIVCO TOTAL</b>	<b>111</b>	<b>1,161</b>	<b>4535</b>	<b>3,300</b>	<b>13,000</b>	<b>28,000</b>	<b>5,000</b>	<b>53,835</b>

**Estimated Costs - Proposed Projects, 2006-2020**

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
<b>BOYD</b>								-
Ashland				200				200
Cannonsburg	3	30	150					150
Big Sandy/Lawrence	2	15	100					100
Big Sandy W/D	11	58	600				300	900
Overland (private)								-
<b>Total</b>	<b>16</b>	<b>103</b>	<b>850</b>	<b>200</b>			<b>300</b>	<b>1,350</b>
								-
<b>CARTER</b>								-
Grayson								-
Olive Hill								-
Rattlesnake Ridge W/D	150	1075	6,800					6,800
<b>Total</b>	<b>150</b>	<b>1075</b>	<b>6,800</b>					<b>6,800</b>
								-
<b>ELLIOTT</b>								-
Sandy Hook W/D								-
<b>Total</b>								<b>0</b>
								-
<b>GREENUP</b>								-
Flatwood W/D	2	20	100				300	400
Greenup W/D	118	265	4,750			4,000	1,500	10,250
Raceland								-
Russell								-
South Shore (private)	11	340	342					-
Worthington				300				300
<b>Total</b>	<b>131</b>	<b>625</b>	<b>5,192</b>	<b>300</b>		<b>4,000</b>	<b>1,800</b>	<b>11,292</b>
								-
<b>LAWRENCE</b>								-
Lawrence Co. W/D								-
Louisa				500				500
<b>Total</b>				<b>500</b>				<b>500</b>
								-
<b>FIVCO TOTAL</b>	<b>297</b>	<b>1,803</b>	<b>12,842</b>	<b>1,000</b>	<b>-</b>	<b>4,000</b>	<b>2,100</b>	<b>19,942</b>

## BOYD COUNTY

### (Boyd County Water Service Area Map)

- Estimated 1999 population of 48,000--95% on public water
- Estimated 2020 population of 43,400--98% on public water
- 450 miles of water lines, with plans for 17 additional miles
- Estimated funding needs for public water 2000-2005: \$335,000
- Estimated funding needs for public water 2006-2020: \$1,350,000

Boyd County had an estimated population of 48,022 (20,200 households) in 1999 with a projected population of 43,412 (19,721 households) in 2020. Public water is provided to 20,300 customers, or about 93 percent of the county's residents. In areas of the county not served by public water the households rely on private domestic wells. About 110 households will be added to public water service through new line extensions in 2000-2020.

#### *Estimated Costs - Proposed Projects, 2000-2005*

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
<b>BOYD</b>								-
Ashland				300				300
Cannonsburg								-
Big Sandy/Lawrence								-
Big Sandy W/D								-
Overland (private)	1	8	35					35
<b>Total</b>	<b>1</b>	<b>8</b>	<b>35</b>	<b>300</b>				<b>335</b>

#### *Estimated Costs - Proposed Projects, 2006-2020*

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
<b>BOYD</b>								-
Ashland				200				200
Cannonsburg	3	30	150					150
Big Sandy/Lawrence	2	15	100					100
Big Sandy W/D	11	58	600				300	900
Overland (private)								-
<b>Total</b>	<b>16</b>	<b>103</b>	<b>850</b>	<b>200</b>			<b>300</b>	<b>1,350</b>

### PUBLIC WATER SYSTEMS

The residents of Boyd County are presently provided water by 4 providers: 1 municipal--the City of Ashland, Department of Utilities; and 2 water districts--the Big Sandy Water District, Cannonsburg Water District; and 1 private system Overland Development, Inc.



# WATER SERVICE AREAS

## BOYD COUNTY

### Kentucky

**Prepared By:**  
**Water Resource Development Commission**

Department for Local Government  
 1024 Capital Center Drive, Suite 340  
 Frankfort, Kentucky 40601-8204  
 502-573-2382 -- 502-573-2939 fax  
<http://dlgnt1.state.ky.us/wrdc/>

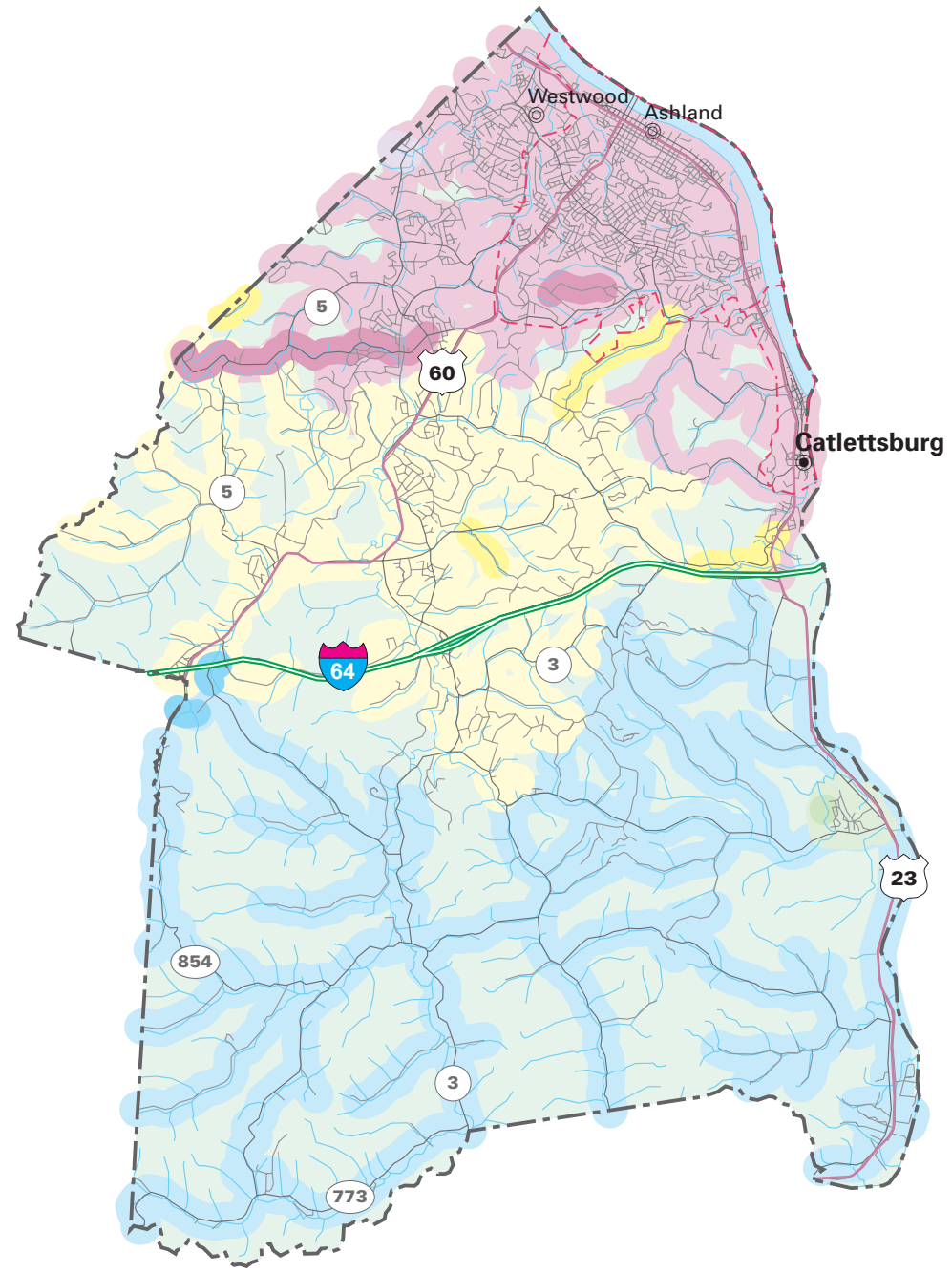
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**WATER SERVICE STATUS BY OWNER**

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		OVERLAND DEVELOPMENT/LOCKWOOD ESTATES
		FLATWOODS WATER COMPANY
		CANNONSBURG WATER DISTRICT
		BIG SANDY WATER DISTRICT
		ASHLAND WATER WORKS

**ASHLAND WATER WORKS**

PWSID:.....	0100011
System Type:.....	COMMUNITY
Owner Type:.....	MUNICIPAL
Surface Source:.....	RESERVOIR
Purchase Source:	
Well Source:	
Sells Water to:.....	CANNONSBURG WATER DISTRICT
Treatment Plant Capacity (MGD):.....	12.00
Percent Daily Average Production:.....	80.00
Total Tank Storage Capacity (gallons):.....	1,000,000.00
Total Service Connections:.....	15,000.00
Number of Employees:.....	9.00
Treatment Operator Class:.....	3D
Distribution Operator Class:.....	4A
Customer Rate for 1,000 Gallons:.....	Not available
O/M costs 1997:.....	Not available
O/M costs per Service Connection:.....	Not available
Net Revenue 1997:.....	Not available
Total Water Produced 1997 (gallons):.....	Not available
Water Sold 1997 (gallons):.....	Not available
Unaccounted-for Water 1997 (%):.....	Not available

Ashland supplies water to the water districts of Cannonsburg, Flatwoods, and Russell. Flatwoods and Russell are located in Greenup County, Kentucky. Ashland gets its water from the Ohio River, and produces an average of 9,000,000 gallons per day with a production capacity of 12,000,000 gallons per day. The water utility has, in time, constructed nine storage tanks with storage capacity of 9,900,000 gallons. Also, of the nine-fulltime employees, eight are certified water treatment operators.

Most of Ashland Department of Utilities' water customers are located within the City of Ashland while the remaining customers are located in the county. In all, the Ashland system provides water to a population of 50,000 for a total of 15,000 connections. 14,795 connections are residential, 200 commercial, and 5 industrial. Most of the city has water lines; however, in the service area of the county there remain some areas that do not have access to water lines. These households fill their water needs by wells or hauled water. In areas where residents must resort to hauled water instead of wells, it is usually because of significant environmental obstacles such as sulfur or salt contamination.

Future extensions of the Ashland system will be for the most part limited to small line extension projects. The only major projects will likely involve the development of the

industrial parkway industrial sites and the upgrading of the water treatment plant. Specifically, the water treatment plant upgrade will include in the short term (0 to 5 years) a seven million-dollar phase and in the long term (6 to 20 years) a twenty million-dollar phase. Street improvements will include in the 0 to 5-year range a one-mile project on Naples Drive while in the 6 to 20 year range a six-mile project is planned for Lowman Drive.

**BIG SANDY WATER DISTRICT**

PWSID: .....	0100944
System Type:.....	COMMUNITY
Owner Type:.....	WATER DISTRICT
Surface Source:	
Purchase Source: .....	BIG SANDY WATER DISTRICT
Well Source:	
Sells Water to: .....	BIG SANDY WATER DISTRICT
Treatment Plant Capacity (MGD):.....	0.00
Percent Daily Average Production:.....	0.00
Total Tank Storage Capacity (gallons): .....	750,000.00
Total Service Connections: .....	2,334.00
Number of Employees:.....	10.00
Treatment Operator Class: .....	2D
Distribution Operator Class:	
Customer Rate for 1,000 Gallons:.....	6.61
O/M costs 1997:.....	646,296.00
O/M costs per Service Connection: .....	276.90
Net Revenue 1997:.....	50,052.00
Total Water Produced 1997 (gallons):.....	0.00
Water Sold 1997 (gallons):.....	151,659,800.00
Unaccounted-for Water 1997 (%): .....	20.36

The Big Sandy Water District not only supplies rural Boyd County but also some rural parts of Lawrence and Carter Counties. They serve 1,345 customers in Boyd, 519 customers in Carter and 470 customers in Lawrence.

Big Sandy purchases their water from Kenova and Louisa. Big Sandy has no water treatment facility and on average purchases 562,000 gallons per day.

Big Sandy is projecting 65,654 feet of water line extensions with an estimated cost of \$171,851. The projects will affect an estimated 44 customers. Currently Big Sandy is not projecting any projects for 6-20 year.

**CANNONSBURG WATER DISTRICT**

PWSID: ..... 0100064  
 System Type:..... COMMUNITY  
 Owner Type:..... WATER DISTRICT  
 Surface Source:  
 Purchase Source: ..... CITY OF ASHLAND  
 Well Source:  
 Sells Water to:  
 Treatment Plant Capacity (MGD):..... 0.00  
 Percent Daily Average Production:..... 0.00  
 Total Tank Storage Capacity (gallons): ..... 30,000.00  
 Total Service Connections: ..... 2,885.00  
 Number of Employees:..... 9.00  
 Treatment Operator Class: .....2D  
 Distribution Operator Class:  
 Customer Rate for 1,000 Gallons:..... 4.82  
 O/M costs 1997:..... 991,625.00  
 O/M costs per Service Connection: ..... 341.59  
 Net Revenue 1997: ..... 31,673.00  
 Total Water Produced 1997 (gallons):..... 0.00  
 Water Sold 1997 (gallons):..... 296,051,000.00  
 Unaccounted-for Water 1997 (%): ..... 9.39

Cannonsburg Water not only supplies rural Boyd County but also some rural parts of Greenup County. They serve 2,885 customers in Boyd, 51 customers in Greenup.

Cannonsburg purchases their water from the City of Ashland. Cannonsburg has no water treatment facility and on average purchases 1,044,630 gallons per day. 351.

Cannonsburg is projecting approximately 10 miles of water line extensions with an estimated cost of \$200,000. The projects will affect an estimated 98 customers. Currently Cannonsburg is not projecting any projects for 6-20 year.

**OVERLAND DEVELOPMENT/LOCKWOOD ESTATES**

PWSID: ..... 0100004  
 System Type:..... COMMUNITY  
 Owner Type:..... PRIVATE  
 Surface Source:  
 Purchase Source:  
 Well Source:  
 Sells Water to:  
 Treatment Plant Capacity (MGD):..... 0.00  
 Percent Daily Average Production:..... 0.00  
 Total Tank Storage Capacity (gallons): ..... 27,500.00  
 Total Service Connections: ..... 100.00  
 Number of Employees:..... 1.00  
 Treatment Operator Class: ..... 1D  
 Distribution Operator Class:

Customer Rate for 1,000 Gallons:.....	5.74
O/M costs 1997:.....	30,261.97
O/M costs per Service Connection: .....	308.80
Net Revenue 1997:.....	620.00
Total Water Produced 1997 (gallons):.....	0.00
Water Sold 1997 (gallons):.....	5,657,000.00
Unaccounted-for Water 1997 (%): .....	7.90

Overland Development supplies water to 100 homes (260 people) in the Lockwood Estates (subdivision) area in the southern part of the county along the Big Sandy River. Overland gets its water from the Big Sandy Water District who in turn gets its water to supply this portion of Boyd County from the water plant across the Big Sandy River in Kenova, West Virginia. In case of emergency the system has five backup wells. Overland, moreover, has no water treatment facility and on average, purchases 18,000 gallons per day with no contractual agreement as to the limit of how much water it can buy.

Now disconnected, the system at one time used two tanks: 1 at 11,500 gallons and 1 at 16,000 gallons. Furthermore, there is only one full time employee who is a certified water treatment and water distribution operator.

Overland Development came into being twenty or so years ago as a way to get water to the residents of Lockwood Estates subdivision. Moreover, since the time of its inception, Overland's purpose remains the same: to service Lockwood's water needs. Because the Lockwood subdivision is for the most part completely built up, there is little expectation in the next twenty years for a need of major line extensions. The only project foreseen is a one-mile series of extensions to take place over the next five years. Currently, all the homes are on water lines.

**PRIVATE DOMESTIC SYSTEMS**

About 2,400 residents of Boyd County rely on private domestic wells for their water supply.

Most wells in valley bottoms are adequate for domestic supply however the volume of ground water available becomes progressively less on hillsides and ridges.

Quite a few high volume wells (>100gpm) are found along the Ohio River alluvium in northern Boyd county. The alluvium along the Big Sandy River also can provide adequate water for domestic use but often contains large amounts of iron.

In the southern and western half of the county, salt water may be found less than 100 feet below the level of the East Fork of the Little Sandy River valley bottom. Most of the water from drilled wells in the county other than the river alluvium is extremely hard and contains noticeable amounts of iron.

A few springs supply sufficient quantities of water for domestic use. Almost all springs yield less than 5 gpm.

## CARTER COUNTY

### (Carter County Water Service Area Map)

- Estimated 1999 population of 26,700--85% on public water
- Estimated 2020 population of 30,000--95% on public water
- 390 miles of water lines, with plans for 180 additional miles
- Estimated funding needs for public water 2000-2005: \$26,900,000
- Estimated funding needs for public water 2006-2020: \$6,800,000

Carter County had an estimated population of 26,687 (10,610 households) in 1999 with a projected population of 30,000 (12,900 households) in 2020. Public water is provided to 9,550 customers, or about 85 percent of the county's residents. In areas of the county not served by public water about 4 of 5 households rely on private domestic wells and 1 of 5 households relies on other sources. About 1,350 households will be added to public water service through new line extensions in 2000-2020.

#### *Estimated Costs - Proposed Projects, 2000-2005*

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
<b>CARTER</b>								-
Grayson	29	275	1,400			8,000	600	10,000
Olive Hill				500	6,000			6,500
Rattlesnake Ridge W/D						8,000	2,400	10,400
<b>Total</b>	<b>29</b>	<b>275</b>	<b>1,400</b>	<b>500</b>	<b>6,000</b>	<b>16,000</b>	<b>3,000</b>	<b>26,900</b>

#### *Estimated Costs - Proposed Projects, 2006-2020*

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
<b>CARTER</b>								-
Grayson								-
Olive Hill								-
Rattlesnake Ridge W/D	150	1,075	6,800					6,800
<b>Total</b>	<b>150</b>	<b>1,075</b>	<b>6,800</b>					<b>6,800</b>

### PUBLIC WATER SYSTEMS

Carter County is served by 3 community systems: 2 municipal water systems, the City of Grayson Utilities and the City of Olive Hill; 1 water district, Rattlesnake Ridge Water District, and 1 non-community system.

# WATER SERVICE AREAS CARTER COUNTY Kentucky

Prepared By:  
**Water Resource Development Commission**

Department for Local Government  
1024 Capital Center Drive, Suite 340  
Frankfort, Kentucky 40601-8204  
502-573-2382 -- 502-573-2939 fax  
<http://dlgnt1.state.ky.us/wrdc/>

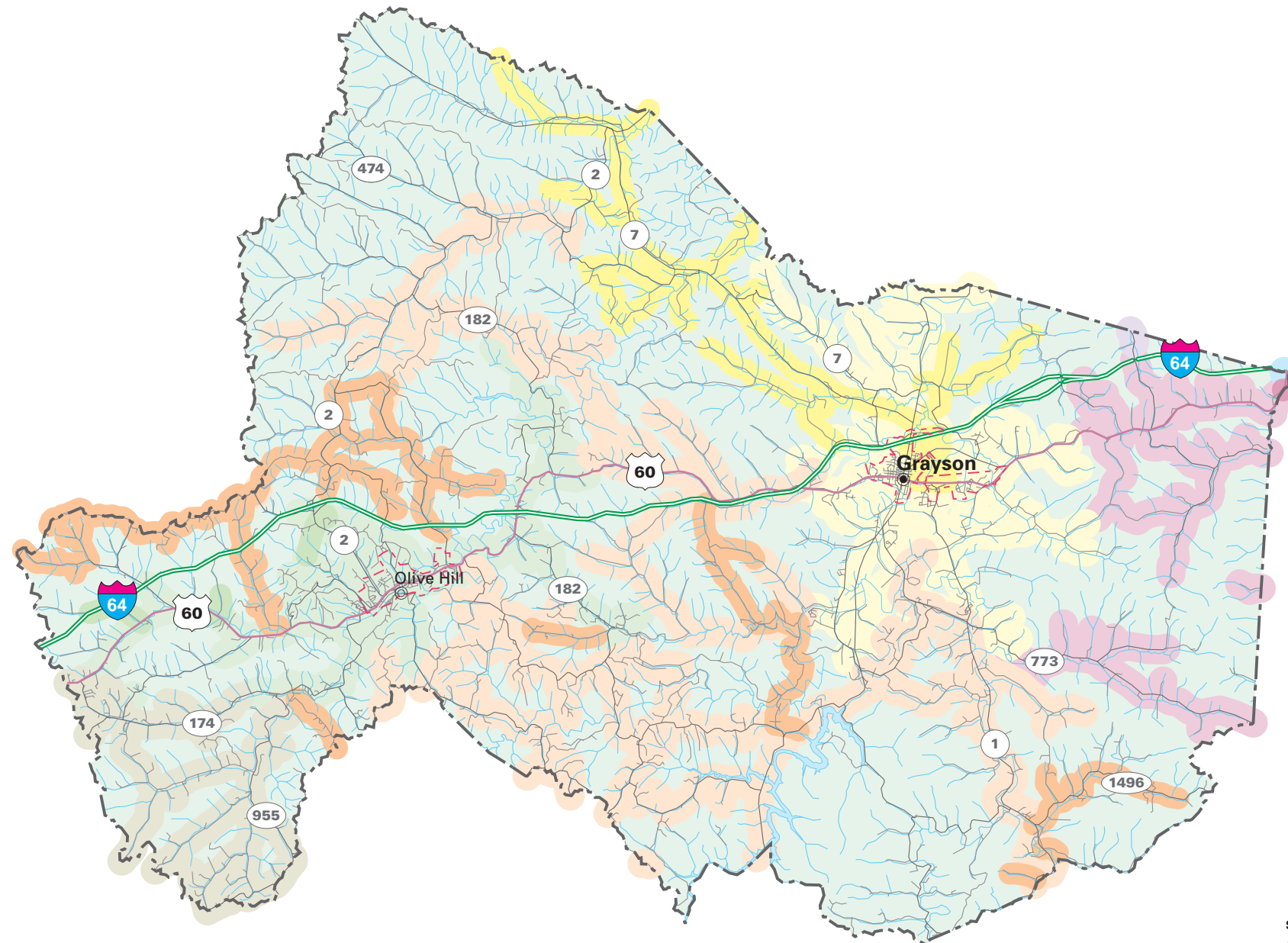
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### WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		ROWAN WATER INCORPORATED
		RATTLESNAKE RIDGE WATER DISTRICT
		OLIVE HILL MUNICIPAL WATER WORKS
		GREENUP WATER PLANT
		GRAYSON UTILITY COMMISSION
		CANNONSBURG WATER DISTRICT
		BIG SANDY WATER DISTRICT



**GRAYSON UTILITY COMMISSION**

PWSID: ..... 0220164  
 System Type:..... COMMUNITY  
 Owner Type:..... WATER DISTRICT  
 Surface Source:..... GRAYSON INTAKE  
 Purchase Source:  
 Well Source:  
 Sells Water to: ..... RATTLESNAKE RIDGE WATER DISTRICT  
 Treatment Plant Capacity (MGD):..... 1.50  
 Percent Daily Average Production:..... 80.00  
 Total Tank Storage Capacity (gallons): ..... 1,710,000.00  
 Total Service Connections: ..... 3,140.00  
 Number of Employees:..... 6.00  
 Treatment Operator Class: .....2D  
 Distribution Operator Class:.....3A  
 Customer Rate for 1,000 Gallons:..... Not available  
 O/M costs 1997:..... Not available  
 O/M costs per Service Connection: ..... Not available  
 Net Revenue 1997: ..... Not available  
 Total Water Produced 1997 (gallons):..... Not available  
 Water Sold 1997 (gallons):..... Not available  
 Unaccounted-for Water 1997 (%): ..... Not available

The City of Grayson Utilities gets it's raw water from the Little Sandy River and treats it's water at a 1.5 million gallon a day plant with an average daily production of 1,234,184 gallons. The treated water storage system consists of four storage tanks distributed throughout the service area with storage capacity of 1,710,000 gallons. . The system has a current total of 3,140 service connections serving a population of 10,990. Six full time employees are currently employed by the system.

Some waterline extensions are now in progress, with others soon to come. These Extensions are based on increasing populations in the outlying areas around Grayson, and the continuing development both commercial and residential near the I-64--Ky-7 interchange at Grayson.

**OLIVE HILL MUNICIPAL WATER WORKS**

PWSID: ..... 0220335  
 System Type:..... COMMUNITY  
 Owner Type:..... MUNICIPAL  
 Surface Source:..... TYGARTS CREEK  
 Purchase Source:  
 Well Source:  
 Sells Water to:  
 Treatment Plant Capacity (MGD):..... 1.30  
 Percent Daily Average Production:..... 55.00

Total Tank Storage Capacity (gallons): .....	250,000.00
Total Service Connections: .....	0.00
Number of Employees:.....	0.00
Treatment Operator Class: .....	2D
Distribution Operator Class:.....	3A
Customer Rate for 1,000 Gallons:.....	Not available
O/M costs 1997:.....	Not available
O/M costs per Service Connection: .....	Not available
Net Revenue 1997: .....	Not available
Total Water Produced 1997 (gallons):.....	Not available
Water Sold 1997 (gallons):.....	Not available
Unaccounted-for Water 1997 (%): .....	Not available

The City of Olive Hill serves a population of 7,491 with water, which is treated at their 1.3 million gallons per day treatment plant. The system storage capacity is 870,000 gallons. Raw water is drawn from a city-owned reservoir, which is permanent. There is also a seasonal surface source at Tygart Creek. Olive Hill has three water system operators. The system also purchases water from the Rowan County Water System in Rowan County, based on seasonal availability.

Olive Hill only has two relatively small waterline extension projects under consideration. These two lines are located at the far western part of the system would serve 18 households. Another line being considered would run from the water treatment plant to connect to an existing line near US-60. This would be a transmission line with customers possibly tapping into it later.

**RATTLESNAKE RIDGE WATER DISTRICT**

PWSID: .....	0220555
System Type:.....	COMMUNITY
Owner Type: .....	WATER DISTRICT
Surface Source:	
Purchase Source: .....	CITY OF GRAYSON
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):.....	0.00
Percent Daily Average Production:.....	0.00
Total Tank Storage Capacity (gallons): .....	786,000.00
Total Service Connections: .....	2,078.00
Number of Employees:.....	7.00
Treatment Operator Class: .....	2D
Distribution Operator Class:	
Customer Rate for 1,000 Gallons:.....	8.03
O/M costs 1997:.....	466,977.00
O/M costs per Service Connection: .....	230.26
Net Revenue 1997: .....	189,095.00

Total Water Produced 1997 (gallons):.....	0.00
Water Sold 1997 (gallons):.....	87,030,000.00
Unaccounted-for Water 1997 (%): .....	10.89

The Rattlesnake Ridge Water District (RSRWD) serves a population of 5,577 people with 2,078 service connections. Water is purchased currently from the City of Grayson Utilities and is stored in its eight storage tanks throughout the system coverage area. The district has storage capacity of 786,000 gallons. RSRWD is multi-county by nature also serving customers in Elliott and Lawrence counties. The water system employs three full time water distribution system operators.

As part of their phase 1 expansion RSRWD is in the planning stages of building a new plant which will be located at Grayson Lake, and to also run a transmission line to service a new prison currently being built in Elliott county. Phase 2 of their expansion calls for new distribution lines to be built to service customers mostly in the northwest quadrant of the service boundary.

## OTHER SYSTEMS

### **CAMP ROBERT C WEBB**

Camp Robert C Webb is located in Carter County. The system serves a population of 250 and has 1 service connection. The state, transient, non-community system has treatment capacity of 20,300 gallons per day.

## PRIVATE DOMESTIC SYSTEMS

About 3,900 people in Carter County rely on private domestic water supplies: 3,100 on wells and 800 on other sources.

In the eastern half of the county most wells in valley bottoms produce adequate amount of water for domestic use. In the rest of the county ground water becomes more scarce with less than half of the wells drilled in valley bottoms able to produce sufficient quantities of water for a domestic supply. Throughout the county, wells on hillsides and ridges become progressively less productive as they move away from the valley bottoms.

Most of the water from drilled wells is very to extremely hard and contains noticeable amounts of iron. Salty water is commonly found in wells drilled less than 100 feet below the level of the principal valley bottoms.

A few springs supply sufficient quantities of water for domestic use. Almost all springs yield less than 5 gpm.

## ELLIOTT COUNTY

### (Elliott County Water Service Area Map)

- Estimated 1999 population of 6,500--35% on public water
- Estimated 2020 population of 6,340--50% on public water
- 150 miles of water lines, with plans for 50 additional miles
- Estimated funding needs for public water 2000-2005: \$9,300,000
- Estimated funding needs for public water 2006-2020: \$0

Elliott County had an estimated population of 6,506 (2,534 households) in 1999 with a projected population of 6,340 (2,680 households) in 2020. Public water is provided to 713 customers, or about 35 percent of the county's residents. In areas of the county not served by public water, about 5 of 6 households rely on private domestic wells and 1 of 6 households rely on other sources. About 430 households will be added to public water service through new line extensions in 2000-2020.

#### *Estimated Costs - Proposed Projects, 2000-2005*

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
<b>ELLIOTT</b>								-
Sandy Hook W/D	47	429	1,700		3,000	4,000	600	9,300
<b>Total</b>	<b>47</b>	<b>429</b>	<b>1,700</b>		<b>3,000</b>	<b>4,000</b>	<b>600</b>	<b>9,300</b>

### PUBLIC WATER SYSTEMS

One water district, Sandy Hook Water District, and one non-community system serve Elliott County.

#### **SANDY HOOK WATER DISTRICT**

PWSID: ..... 0320383  
 System Type:..... COMMUNITY  
 Owner Type:..... WATER DISTRICT  
 Surface Source:  
 Purchase Source:  
 Well Source: ..... Yes  
 Sells Water to:  
 Treatment Plant Capacity (MGD):..... 0.35  
 Percent Daily Average Production:..... 63.00  
 Total Tank Storage Capacity (gallons): ..... 160,000.00  
 Total Service Connections: ..... 713.00  
 Number of Employees:..... 4.00

# WATER SERVICE AREAS ELLIOTT COUNTY Kentucky



**Prepared By:**  
**Water Resource Development Commission**

Department for Local Government  
1024 Capital Center Drive, Suite 340  
Frankfort, Kentucky 40601-8204  
502-573-2382 -- 502-573-2939 fax  
<http://dlgnt1.state.ky.us/wrdc/>

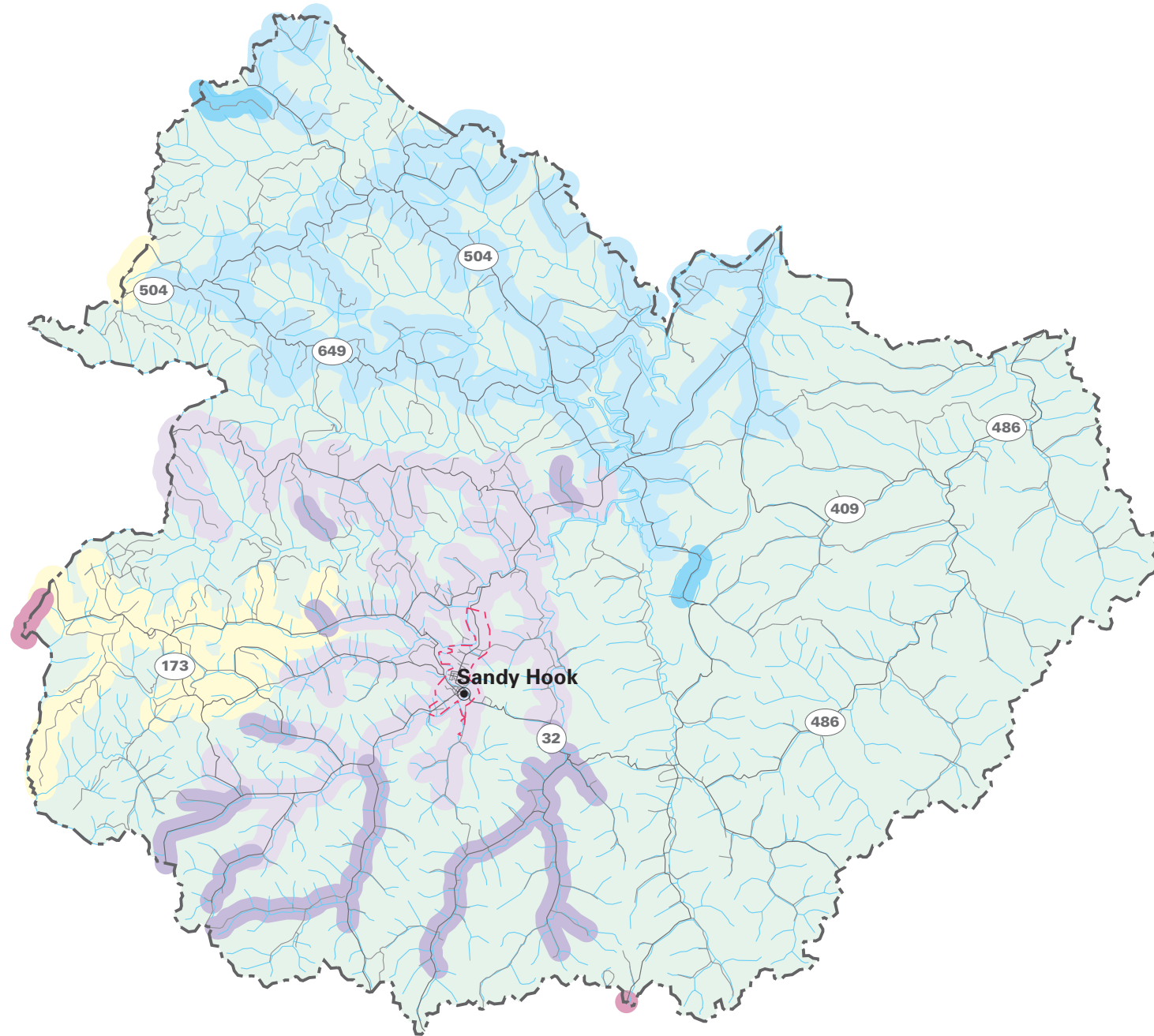
Bob Arnold, Chairman  
Lawrence Wetherby, Executive Director

Final GIS & Cartographic Operations By:  
Kent Anness & Kim Prough

Data Collection & GIS Input By:  
Kentucky Area Development Districts



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### WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		SANDY HOOK WATER DISTRICT
		ROWAN WATER INCORPORATED
		RATTLESNAKE RIDGE WATER DISTRICT
		MORGAN COUNTY WATER DISTRICT

Treatment Operator Class:	
Distribution Operator Class:.....	2BD
Customer Rate for 1,000 Gallons:.....	6.33
O/M costs 1997:.....	154,085.00
O/M costs per Service Connection: .....	217.94
Net Revenue 1997:.....	46,408.00
Total Water Produced 1997 (gallons):.....	53,642,000.00
Water Sold 1997 (gallons):.....	42,755,050.00
Unaccounted-for Water 1997 (%): .....	9.79

Sandy Hook Water District is the only water supplier in the County. Sandy Hook serves a population of 2,350 with 713 service connections. Water is supplied by four well sources and stored in two storage tanks.

Sandy Hook is projecting approximately 31 miles of water line extensions with an estimated cost of \$1,000,000. The projects will affect an estimated 320 customers. Sandy Hook has one project for 6-20 year. The project is approximately 2,500 feet with an estimated cost of \$7,500. The project will affect 6 customers.

## OTHER SYSTEMS

### **ISONVILLE ELEMENTARY SCHOOL**

Isonville Elementary School is located in Elliott County. The system serves a population of 140 and has 1 service connection. The local, non-transient, non-community system has treatment capacity of 7,200 gallons per day. The water source is wells.

## PRIVATE DOMESTIC SYSTEMS

About 4,250 residents of Carter County rely on private domestic water supplies: 3,500 on wells and 750 on other sources.

Most wells in valley bottoms are adequate for domestic supply. In the southeastern half of the county, fewer than half of the wells on hillsides are adequate for domestic use and wells on hilltops produce smaller quantities of water. In the northwestern half of the county most of the wells drilled on hillsides are adequate for domestic supply and about half the wells on hilltops and ridges are adequate for domestic supply. Deep well penetrating thick sections of sandstone may yield enough water for small municipal or industrial supplies.

Water obtained from most wells of the northwestern part of the county is soft or moderately hard whereas most of the water from the southeastern part of the county is extremely hard. County wide, water contains noticeable amounts of iron. Salty water may be found less than 100 feet below the level of the principal valley bottoms.

A few springs supply sufficient quantities of water for domestic use, however yields are usually less than 5 gpm.



## GREENUP COUNTY

### (Greenup County Water Service Area Map)

- Estimated 1999 population of 36,800--85% on public water
- Estimated 2020 population of 35,500--90% on public water
- 345 miles of water lines, with plans for 140 additional miles
- Estimated funding needs for public water 2000-2005: \$16,000,000
- Estimated funding needs for public water 2006-2020: \$11,292,000

Greenup County had an estimated population of 36,816 (14,364 households) in 1999 with a projected population of 35,500 (15,200 households) in 2020. Public water is provided to about 85 percent of the county's residents. In areas of the county not served by public water, households rely on private domestic wells. About 700 households will be added to public water service through new line extensions in 2000-2020.

#### *Estimated Costs - Proposed Projects, 2000-2005*

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
<b>GREENUP</b>								-
Flatwood W/D								-
Raceland	9	72	400	500			300	1,200
Russell				2,000		8,000	500	10,500
South Shore (private)					2,000			2,000
Worthington								-
Wurtland					2,000		300	2,300
<b>Total</b>	<b>9</b>	<b>72</b>	<b>400</b>	<b>2,500</b>	<b>4,000</b>	<b>8,000</b>	<b>1,100</b>	<b>16,000</b>

#### *Estimated Costs - Proposed Projects, 2006-2020*

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/ Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
<b>GREENUP</b>								-
Flatwood W/D	2	20	100				300	400
Greenup W/D	118	265	4,750			4,000	1,500	10,250
Raceland								-
Russell								-
South Shore (private)	11	340	342					-
Worthington				300				300
<b>Total</b>	<b>131</b>	<b>625</b>	<b>5,192</b>	<b>300</b>		<b>4,000</b>	<b>1,800</b>	<b>11,292</b>

# WATER SERVICE AREAS GREENUP COUNTY Kentucky



**Prepared By:**  
**Water Resource Development Commission**

Department for Local Government  
1024 Capital Center Drive, Suite 340  
Frankfort, Kentucky 40601-8204  
502-573-2382 -- 502-573-2939 fax  
<http://dlgnt1.state.ky.us/wrdc/>

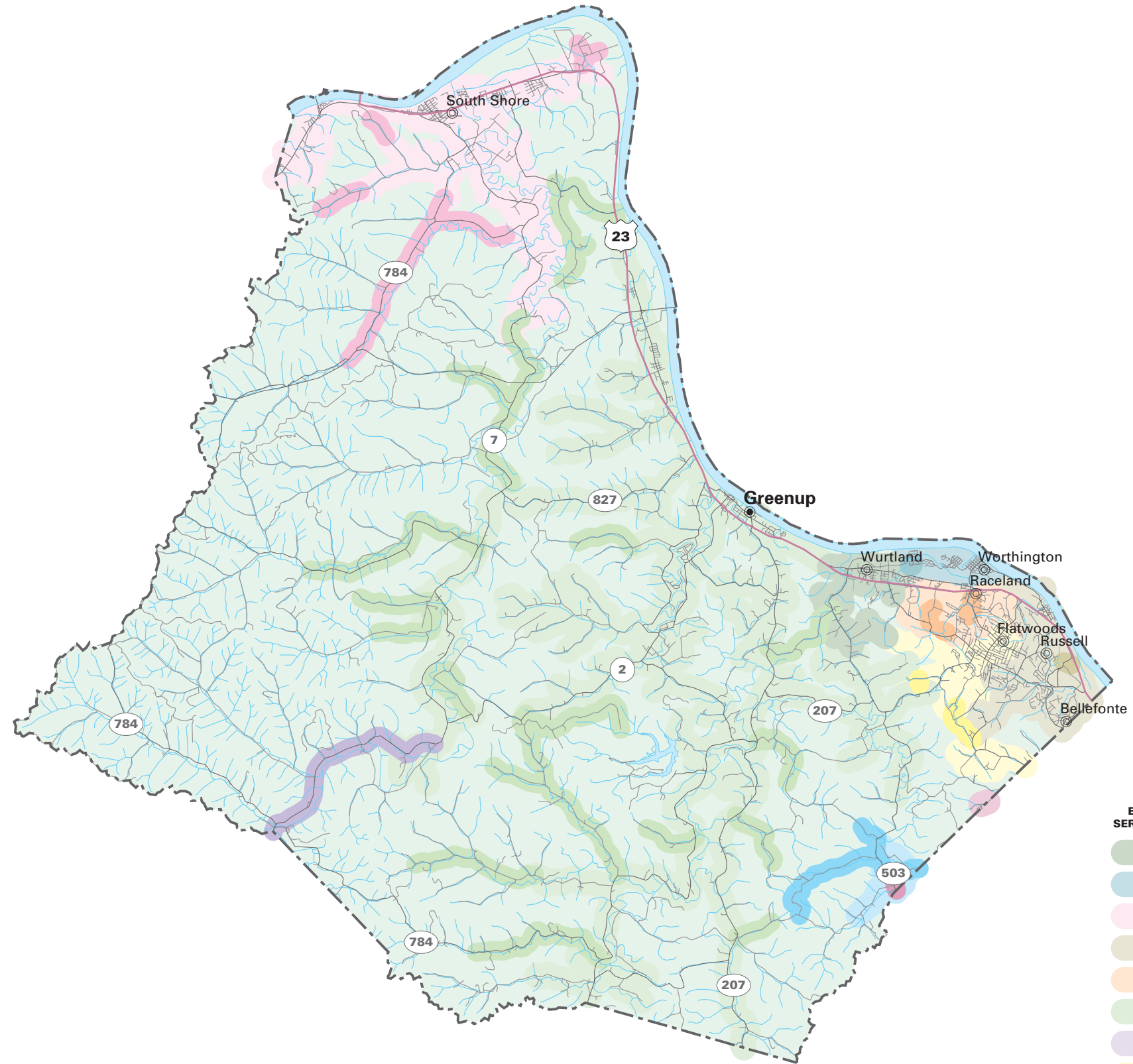
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Final GIS & Cartographic Operations By:  
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**WATER SERVICE STATUS BY OWNER**

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		WURLAND WATER DEPARTMENT
		WORTHINGTON MUNICIPAL WATER WORKS
		SOUTH SHORE WATER WORKS INCORPORATED
		RUSSELL WATER COMPANY
		RACELAND WATER SYSTEM
		GREENUP WATER PLANT
		GRAYSON UTILITY COMMISSION
		FLATWOODS WATER COMPANY
		CANNONSBURG WATER DISTRICT
		ASHLAND WATER WORKS

**PUBLIC WATER SYSTEMS**

Greenup County is served by 8 public water systems: 6 municipal, City of Greenup, City of Flatwoods, City of Raceland, City of Russell, City of Worthington, and City of Wurtland; 1 private, South Shore Water Works, Inc.; and one non-community system.

**FLATWOODS WATER COMPANY**

PWSID: ..... 0450132  
 System Type:..... COMMUNITY  
 Owner Type:..... MUNICIPAL  
 Surface Source:  
 Purchase Source: ..... KY-1458  
 Well Source:  
 Sells Water to:.....RACELAND WATER SYSTEM  
 Treatment Plant Capacity (MGD):..... 0.00  
 Percent Daily Average Production:..... 0.00  
 Total Tank Storage Capacity (gallons):..... 750,000.00  
 Total Service Connections: ..... 3,113.00  
 Number of Employees:..... 10.00  
 Treatment Operator Class:.....2D  
 Distribution Operator Class:  
 Customer Rate for 1,000 Gallons:..... Not available  
 O/M costs 1997:..... Not available  
 O/M costs per Service Connection: ..... Not available  
 Net Revenue 1997:..... Not available  
 Total Water Produced 1997 (gallons):..... Not available  
 Water Sold 1997 (gallons):..... Not available  
 Unaccounted-for Water 1997 (%): ..... Not available

The City of Flatwoods, Kentucky operates the city's water distribution plant. They purchase water from the Russell Water Works, Russell, Kentucky and Ashland Water Works, Ashland, Kentucky. Flatwoods purchases treated water under contracts. Flatwoods operates two tanks with capacities of 250,000 (ground storage) and 500,000 (standpipe) gallons.

The total number of service connections is 3,113. 2,946 were residential and the remaining 167 were classified as commercial. The City Flatwoods maintains their own lines and is responsible for billing the water customers. Flatwoods Water has one water distribution system operator who holds at Classification II-D.

**GREENUP WATER PLANT**

PWSID: ..... 0450169  
 System Type:..... COMMUNITY  
 Owner Type:..... MUNICIPAL  
 Surface Source:..... LITTLE SANDY  
 Purchase Source:

Well Source:  
 Sells Water to:..... WURLAND WATER DEPARTMENT  
 Treatment Plant Capacity (MGD):..... 1.00  
 Percent Daily Average Production:..... 75.00  
 Total Tank Storage Capacity (gallons):..... 975,000.00  
 Total Service Connections: ..... 3,000.00  
 Number of Employees:..... 11.00  
 Treatment Operator Class: .....2D  
 Distribution Operator Class:.....3A  
 Customer Rate for 1,000 Gallons:..... Not available  
 O/M costs 1997:..... Not available  
 O/M costs per Service Connection: ..... Not available  
 Net Revenue 1997: ..... Not available  
 Total Water Produced 1997 (gallons):..... Not available  
 Water Sold 1997 (gallons):..... Not available  
 Unaccounted-for Water 1997 (%): ..... Not available

The City of Greenup services the city, much of the county, and the City of Wurtland. Greenup City gets its water from the Little Sandy River while using the Ohio River only as an emergency source. Daily production averages around 750,000 gallons per day with the last twelve months highest daily withdrawal being 922,000 gallons. Production capacity is 1,000,000 gallons per day. The system has storage capacity of 975,000 gallons. Also, of the eleven-fulltime employees, four are certified water treatment operators.

The Greenup Water Plant provides water to a population of 9,000 through 3,000 connections: 2,525 residential households, 375 commercial, and 3 industrial customers. Most of the city has water lines; however, in the service area of the county there remain several areas which do not have access to water lines. These households fill their water needs by wells or hauled water.

Future extensions of the system will include the completion of the joint City of Greenup and Greenup County “Phase VI” project, which will add 31 miles to the existing 235 miles of water lines. The Phase VI will increase by around 285 the number of residential households in the system. In the next two to five years 250 households will also be added to the system. All of this comes after the just completed “Phase V” project which involved the improvement of the water treatment plant to a production capacity of two million gallons per day. In addition, the next few years will likely see planning for the expected growth from the industrial parkway project.

**RACELAND WATER SYSTEM**

PWSID:.....	0450365
System Type:.....	COMMUNITY
Owner Type:.....	MUNICIPAL
Surface Source:	
Purchase Source: .....	RUSSELL
Well Source:	
Sells Water to:	
Treatment Plant Capacity (MGD):.....	0.00
Percent Daily Average Production:.....	0.00
Total Tank Storage Capacity (gallons):.....	100,000.00
Total Service Connections: .....	1,250.00
Number of Employees:.....	5.00
Treatment Operator Class:.....	2D
Distribution Operator Class:	
Customer Rate for 1,000 Gallons:.....	Not available
O/M costs 1997:.....	Not available
O/M costs per Service Connection: .....	Not available
Net Revenue 1997:.....	Not available
Total Water Produced 1997 (gallons):.....	Not available
Water Sold 1997 (gallons):.....	Not available
Unaccounted-for Water 1997 (%): .....	Not available

The City of Raceland, Kentucky owns Raceland Water Works. They purchase treated water from the City of Russell (Russell Water Works) and from the City of Flatwoods (City of Flatwoods Water). Total number of service connections for Raceland Water works is 1,250: 1,154 residential, 48 commercial, 34 industrial, and 14 institutional. The total population served is 2,441. The City of Raceland maintains the lines and bills the customers.

Raceland's main water sources are Russell Water Works, whose water source is the Ohio River, and the City of Ashland (during adverse seasonal conditions). Flatwood and Russell's individual available capacity source to Raceland Water Works is 107,750 gallons per day. The system has storage capacity of 100,000 gallons.

Raceland does not operate a water treatment plant but does have one elevated tank located at Caldwell. Raceland Water Works is totally dependent on the two sources mentioned above. If there is a line break it affects Raceland's residents too. If the water is turned off (which is fairly common) they may not know about it until after it happens. Raceland Water Works has two water distribution system operators. The Water Distribution System Operators both have II-D classifications, meeting the required classification.

Raceland Water Works must provide service to all the residents within the city limits of Raceland. A few known projects have been identified for the 0-5 year time frame. Too many dead end lines have been noted. All future construction and repairs will attempt to loop the lines for continuous flow and better pressure. However, requirements for 2005-2020 are difficult to predict. At this time all known dwellings within the city of Raceland are being served.

**RUSSELL WATER COMPANY**

PWSID: ..... 0450376  
 System Type:..... COMMUNITY  
 Owner Type:..... MUNICIPAL  
 Surface Source:.....OHIO RIVER  
 Purchase Source: ..... CITY OF ASHLAND  
 Well Source:  
 Sells Water to: .....RACELAND WATER SYSTEM  
 Treatment Plant Capacity (MGD):..... 2.00  
 Percent Daily Average Production:..... 100.00  
 Total Tank Storage Capacity (gallons): ..... 100,000.00  
 Total Service Connections: ..... 2,500.00  
 Number of Employees:..... 5.00  
 Treatment Operator Class: .....2D  
 Distribution Operator Class:.....3A  
 Customer Rate for 1,000 Gallons:.....Not available  
 O/M costs 1997:.....Not available  
 O/M costs per Service Connection: .....Not available  
 Net Revenue 1997: .....Not available  
 Total Water Produced 1997 (gallons):.....Not available  
 Water Sold 1997 (gallons):.....Not available  
 Unaccounted-for Water 1997 (%): .....Not available

The City of Russell, Kentucky owns Russell Water Works. Their source of water is the Ohio River. The system has treatment capacity of 2,000,000 gallons per day and storage capacity of 1,900,000 gallons. They also purchase water from the city of Ashland, Kentucky on a seasonal basis. The total number of service connections is 2,500. Russell Water Works services the cities of Russell and Bellefonte. The City of Bellefonte is actually located in Boyd County. The city of Russell bills and maintains the lines in the city of Bellefonte. Additionally, Russell Water Works sells water to the city's of Flatwoods and Raceland.

The water treatment plant's 24 hour rated capacity is 2 million gallons a day. At this time the plant is operating at 100% capacity. Russell Water Works storage system consists of four

elevated tanks located throughout the city. Russell's current water storage capacity is 1.9 million gallons.

Russell Water Works has five (5) employees. All five employees are classified as Water Treatment Plant Operators, while only four are classified as Water Distribution Systems Operators. Requirement for the Water Treatment Plant Operator is III-A and all but one operator meet or exceeds this requirement (2 at III-A, 2 at IV & 1 at II). Water Distribution Systems Operators for Russell Water Works requires a classification II. All Distribution Operators either meet or exceed this requirement (2 at II & 2 at III).

With the anticipated increase in population/growth in there will be needed to update and expand the existing facilities. The Russell population change for 1990 to 1996 as indicated by the United States Census Bureau and Kentucky Population Research Estimates increased 11.5%. Continued growth for this area and for Greenup County is expected. Larger tanks and an upgraded plant will be needed for the future. The cost has not yet been determined.

All known dwellings are being served within the city limits of Russell, Flatwoods and Raceland.

**SOUTH SHORE WATER WORKS INCORPORATED**

PWSID: ..... 0450410  
 System Type:..... COMMUNITY  
 Owner Type:..... PRIVATE  
 Surface Source:  
 Purchase Source:  
 Well Source: ..... Yes  
 Sells Water to:  
 Treatment Plant Capacity (MGD):..... 1.00  
 Percent Daily Average Production:..... 47.00  
 Total Tank Storage Capacity (gallons): ..... 248,000.00  
 Total Service Connections: ..... 2,250.00  
 Number of Employees:..... 8.00  
 Treatment Operator Class: .....2D  
 Distribution Operator Class:..... 3B  
 Customer Rate for 1,000 Gallons:..... 3.19  
 O/M costs 1997:..... 369,149.00  
 O/M costs per Service Connection: ..... 167.11  
 Net Revenue 1997: ..... 36,568.00  
 Total Water Produced 1997 (gallons):..... 160,554,000.00  
 Water Sold 1997 (gallons): ..... 128,073,000.00  
 Unaccounted-for Water 1997 (%): ..... 14.89

South Shore Water, Inc. is Greenup County's only privately owned and managed water system. South Shore gets its water from eleven seasonal wells and from them produces on average 453,000 gallons a day. The permitted withdrawal from the well field is 1,000,000 gallons per day with the water treatment capacity being 1,000,000 gallons per day. The system has storage capacity of 248,000 gallons. Of the eight-fulltime employees, three are certified water treatment operators.

South Shore customers are located primarily in the South Shore area: 2,000 in Greenup County and 250 in neighboring Lewis County, Kentucky. In all, South Shore provides service to a population of 7,500. Of the 2,250 connections 2,106 are residential, 120 commercial, 4 industrial, and 20 classed as "other." In South Shore's service area there remain some areas that do not have access to waterlines. These 150 households fill their water needs by wells or hauled water.

In the future, South Shore Water Works expects a water deficit to occur. For this reason South Shore will be connecting into the City of Greenup's "Phase VI" water system improvements. This will bring the district's total available capacity to 2,000,000 gallons per day, which will be carried by two planned 6-inch connections. The will be complete within the next five years. South Shore's improvements, moreover, during the last two years have included a new pumping station, new treatment equipment, the replacement of aged steel lines, new water main extensions, new meters, new tanks, etc.

**WORTHINGTON MUNICIPAL WATER WORKS**

PWSID: ..... 0450478  
System Type:..... COMMUNITY  
Owner Type:..... MUNICIPAL  
Surface Source:  
Purchase Source:  
Well Source: ..... Yes  
Sells Water to:  
Treatment Plant Capacity (MGD):..... 0.25  
Percent Daily Average Production:..... 55.00  
Total Tank Storage Capacity (gallons): ..... 200,000.00  
Total Service Connections: ..... 690.00  
Number of Employees:..... 5.00  
Treatment Operator Class:  
Distribution Operator Class:..... 2BD  
Customer Rate for 1,000 Gallons:.....Not available  
O/M costs 1997:.....Not available



O/M costs per Service Connection: ..... Not available  
Net Revenue 1997: ..... Not available  
Total Water Produced 1997 (gallons): ..... Not available  
Water Sold 1997 (gallons): ..... Not available  
Unaccounted-for Water 1997 (%): ..... Not available

Located in Greenup County, the Worthington Municipal Water provides water service to the town of Worthington. The source of the water is three wells: one producing an average of 93,000 gallons per day and two producing an average of 144,00 gallons per day. The permitted daily withdrawal from these wells is 250,000 gallons per day. Within the last twelve months the highest average gallons per day withdrawn was 204,000 from one well and 194,000 from each of the other two wells. There is one storage tank has a capacity of 200,000 gallons. Of the five-fulltime district employees, four are certified water treatment operators.

Worthington provides water service to a population of 1,751. There are 690 service connections: 677 households, 8 commercial, and 5 institutional.

Planned extensions to the Worthington system include an extension within the next five years and one in the next six to twenty years. The immediate project will connect Newman Drive to McCloud Drive, thereby, extending .25 miles. The more distant project will involve nine lots within Zane Court and Franz Drive and will extend .33 miles.

Furthermore, growth related to the industrial parkway may call for the extension of lines into an area west of the city. Despite these future extensions, future growth of the Worthington water district will be quite limited given the physical location of the town. To the north of the town is an airport and the Ohio River, to the south is the large CSX rail facility, to the east is a floodplain, and to the west very little land within the city limits.

**WURLAND WATER DEPARTMENT**

PWSID: ..... 0450479  
System Type: ..... COMMUNITY  
Owner Type: ..... WATER DISTRICT  
Surface Source:  
Purchase Source: ..... CITY OF GREENUP  
Well Source:  
Sells Water to:  
Treatment Plant Capacity (MGD): ..... 0.00  
Percent Daily Average Production: ..... 0.00  
Total Tank Storage Capacity (gallons): ..... 150,000.00

Total Service Connections: .....	575.00
Number of Employees:.....	2.00
Treatment Operator Class: .....	2D
Distribution Operator Class:.....	2A
Customer Rate for 1,000 Gallons:.....	Not available
O/M costs 1997:.....	Not available
O/M costs per Service Connection: .....	Not available
Net Revenue 1997: .....	Not available
Total Water Produced 1997 (gallons):.....	Not available
Water Sold 1997 (gallons):.....	Not available
Unaccounted-for Water 1997 (%): .....	Not available

The City of Wurtland, Kentucky owns Wurtland Water Works. Wurtland Water Works purchases treated water from the City of Flatwoods, Kentucky and from the City of Greenup, Kentucky. All known dwellings are presently being serviced if they fall within Wurtland's city limits. The total number of service connections is 575: 555 residential, 17 commercial, and 3 industrial. The total population served was 1,225. The City of Wurtland is responsible for the water consumption billing.

There is no water treatment plant or water treatment plant operators. The Water Distribution System requires an II-D Classification. There are two (2) Water Distribution system operators, one with an II-D classification and the other with III-D classification.

Over the next several years the City of Wurtland expects that Greenup will no longer be able to supply them the needed water. If this is the case, Wurtland will have to look for other sources. At present, Flatwoods limits the amount of water to be purchased meaning that there would not be enough to serve those connected with the lines served from Greenup Water. The other alternative would be to establish their own Water Treatment Plant and Distribution Center. This will probably be a viable solution some time down the road.

**OTHER SYSTEMS**

**GREENBO LAKE STATE RESORT PARK**

Greenbo Lake State Resort Park is located in Greenup County. The system serves a population of 200 and has 10 service connections. The state, non-transient, non-community system has treatment capacity of 156,528 gallons per day. The water source is Greenbo Lake.

## PRIVATE DOMESTIC SYSTEMS

About 5,500 people in Greenup County rely on private domestic wells for their water supply.

Most wells in valley bottoms in the eastern half of the county are adequate for domestic supply. In the western half of the county groundwater becomes more scarce with less than half of the wells drilled in valley bottoms able produce sufficient quantities of water for a domestic supply. Throughout the county, wells on hillsides and ridges become progressively less productive as they move away from the valley bottoms. Quite a few high volume wells (>50gpm) are found along the Ohio River alluvium in northern Greenup County.

Most of the water from drilled wells is very to extremely hard and contains noticeable amounts of iron. Salty water is commonly found in wells drilled less than 100 feet below the level of the principal valley bottoms.

A few springs supply sufficient quantities of water for domestic use. Almost all springs yield less than 5 gpm.

## LAWRENCE COUNTY

### (Lawrence County Water Service Area Map)

- Estimated 1999 population of 15,700--40% on public water
- Estimated 2020 population of 17,800--42% on public water
- 200 miles of water lines, with plans for 25 additional miles
- Estimated funding needs for public water 2000-2005: \$1,300,000
- Estimated funding needs for public water 2006-2020: \$500,000

County had an estimated population of 15,699 (6,177 households) in 1999 with a projected population of 17,800 (7,700 households) in 2020. Public water is provided to about 40 percent of the county's residents. In areas of the county not served by public water, almost all the households rely on private domestic wells. About 185 customers will be added to public water service through new line extensions in 2000-2020.

#### *Estimated Costs - Proposed Projects, 2000-2005*

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/Pumps	Total
	Miles	Number	Cost in \$1000	In \$1000	in \$1000	in \$1000	in \$1000	in \$1000
<b>LAWRENCE</b>								-
Lawrence Co. W/D	25	184	1,000				300	1,300
Louisa								-
<b>Total</b>	<b>25</b>	<b>184</b>	<b>1,000</b>				<b>300</b>	<b>1,300</b>

#### *Estimated Costs - Proposed Projects, 2006-2020*

COUNTY/System		New Customers		Rehab	Source	Treatment	Tanks/Pumps	Total
	Miles	Number	Cost in \$1000	in \$1000	in \$1000	in \$1000	in \$1000	in \$1000
<b>LAWRENCE</b>								-
Lawrence Co. W/D								-
Louisa				500				500
<b>Total</b>				<b>500</b>				<b>500</b>

### PUBLIC WATER SYSTEMS

Lawrence County is served by 8 public or semi-public water systems: 2 municipal, Louisa Water Works and Paintsville Utilities; 3 water districts, Lawrence County Water Board, Big Sandy Water District, Rattlesnake Ridge Water District; and 3 non-community systems.

# WATER SERVICE AREAS

## LAWRENCE COUNTY

### Kentucky

Prepared By:  
Water Resource Development Commission

Department for Local Government  
1024 Capital Center Drive, Suite 340  
Frankfort, Kentucky 40601-8204  
502-573-2382 -- 502-573-2939 fax  
<http://dlgnt1.state.ky.us/wrdc/>

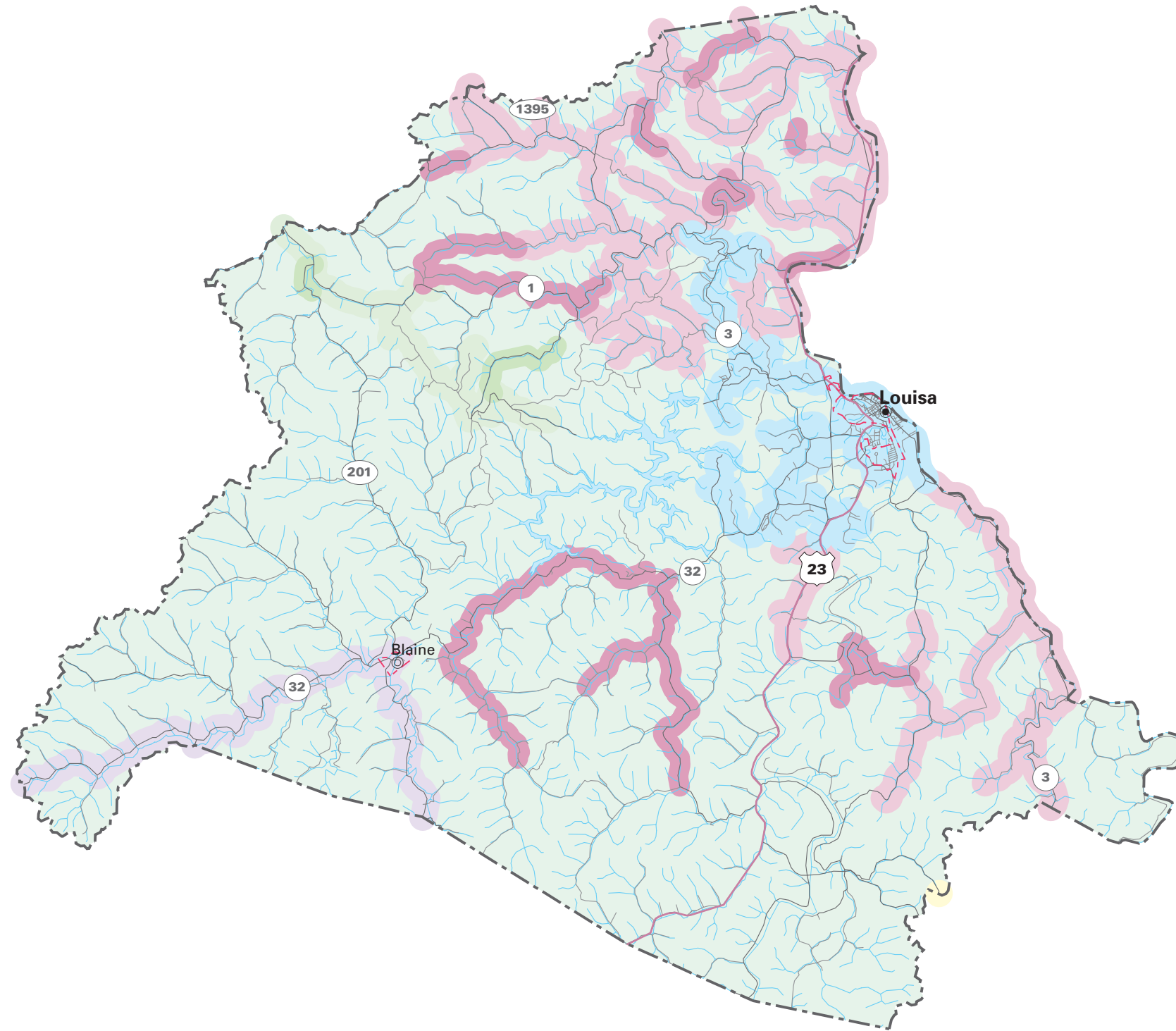
Bob Arnold, Chairman  
Lawrence Wetherby, Executive Director

Final GIS & Cartographic Operations By:  
Kent Anness & Kim Prough

Data Collection & GIS Input By:  
Kentucky Area Development Districts



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#### WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	OWNER
		RATTLESNAKE RIDGE WATER DISTRICT
		PAINTSVILLE MUNICIPAL WATER WORKS
		MARTIN COUNTY WATER DISTRICT #2
		LOUISA WATER DEPARTMENT
		BIG SANDY WATER DISTRICT

**LAWRENCE COUNTY WATER BOARD**

The Lawrence County Water Board serves the south/south-central portion of Lawrence County, Kentucky. The source of Lawrence County Water Board water is the City of Louisa Water Works, which allows Lawrence County a maximum of 5 million gallons per month (or around 166,000 gallons per day). The system has one storage tank with a capacity of 100,000 gallons. Recently, the system completed a “Phase I” project of new lines and has plans for a “Phase II” project which will add 32 miles and around 276 households to the system in the next five years. The cost of the Phase II project will be around 1.9 million dollars.

Currently, the system is undergoing a change of ownership. Shortly, the Big Sandy Water District will take control of Louisa Water and has agreed to continue with the “Phase II” project begun by Lawrence County Water. Future development in the southern portion of the county through such catalysts as a new prison is expected to increase demand for lines in the south/southeast portion of the county not currently receiving service or being planned for service.

**LOUISA WATER DEPARTMENT**

PWSID: .....	0640257
System Type:.....	COMMUNITY
Owner Type: .....	MUNICIPAL
Surface Source:.....	LEVISA FORK, BIG SANDY
Purchase Source:	
Well Source:	
Sells Water to: .....	BIG SANDY WATER DISTRICT
Treatment Plant Capacity (MGD):.....	1.30
Percent Daily Average Production:.....	68.00
Total Tank Storage Capacity (gallons): .....	2,800,000.00
Total Service Connections: .....	2,100.00
Number of Employees:.....	8.00
Treatment Operator Class: .....	2D
Distribution Operator Class:.....	3A
Customer Rate for 1,000 Gallons:.....	Not available
O/M costs 1997: .....	Not available
O/M costs per Service Connection: .....	Not available
Net Revenue 1997: .....	Not available
Total Water Produced 1997 (gallons):.....	Not available
Water Sold 1997 (gallons): .....	Not available
Unaccounted-for Water 1997 (%): .....	Not available

Another of the five water districts supplying water to Lawrence County, Louisa Water Works primarily furnishes water to the City of Louisa; however, some limited service to areas

directly outside of the city has been provided. In addition, Louisa Water sells water to the Lawrence County Water Board and the Big Sandy Water District.

Louisa Water Works gets its water from the Levisa Fork of the Big Sandy River. On average 670,000 gallons of water are produced per day with a 24 hour rated capacity of 1.3 million gallons. The municipal, community system has storage capacity of 2,806,000 gallons. Moreover, the district employs eight employees with three being employed as certified water treatment operators.

For the most part, Louisa Water customers reside within the City of Louisa with a population of 6,300 being served. In all, there are 2,000 service connections: 1,875 of which are residential users, 165 are commercial, 2 are industrial, and 58 are institutional. Those not on water lines, which are few in the City of Louisa, must have their water hauled or must use wells.

There are no immediate plans for line extensions within the district. The Lawrence County Water Board will service any areas not currently serviced.

## OTHER SYSTEMS

### **CAMP CALEB INC**

Camp Caleb Inc is located in Lawrence County. The system serves a population of 25 and has 1 service connection. The private, transient, non-community system has treatment capacity of 20,160 gallons per day. The water source is ground water from wells.

### **DOCKS PIZZA INC**

Docks Pizza Inc is located in Lawrence County. The system serves a population of 60 and has 1 service connection. The private, transient, non-community system has treatment capacity of 12,000 gallons per day. The water source is ground water from wells.

### **HAPPY MART #23**

Happy Mart #23 is located in Lawrence County. The system serves a population of 200 and has 1 service connection. The private, transient, non-community system has treatment capacity of 5,000 gallons per day. The water source is ground water from wells.

## PRIVATE DOMESTIC SYSTEMS

About 9,200 people in Lawrence County rely on private domestic wells for their source of water.

Most wells in valley bottoms produce adequate amounts of water for domestic supply. Fewer than half of the wells drilled on hillsides are adequate for a domestic supply. Wells on hilltops and ridges yield smaller quantities of water.

Most of the water from drilled wells is extremely hard and contains noticeable amounts of iron. In the northeast and southeast half of the county, salty water may be found in wells drilled into bedrock less than 100 feet below the level of the principal valley bottoms.

A few springs supply sufficient quantities of water for domestic use. Almost all springs yield less than 5gpm.