

Water-Resource Development: A Strategic Plan

Summary of Water Systems Buffalo Trace Area Development District

Water Resources Development Commission

October, 1999

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BUFFALO TRACE AREA DEVELOPMENT DISTRICT

327 West Second Street
P.O. Box 460
Maysville, KY 41056
(606) 564-6894

REGIONAL OVERVIEW

(Buffalo Trace ADD Existing & Proposed Water Lines Map)

- Estimated 1999 population of 54,100--72% on public water
- Estimated 2020 population of 55,700--82% on public water
- 1,120 miles of water lines, with plans for 385 additional miles
- Estimated funding needs for public water 2000-2005--\$13,900,000
- Estimated funding needs for public water 2006-2020---\$7,400,000

The region had an estimated population of 54,061 (22,054 households) in 1999 with a projected population of 55,700 (24,300 households) in 2020. There are 1,120 miles of water lines in the region serving 38,600 people, or about 72% of the region's population. 385 miles of proposed water line extensions for the period 2000-2020 would provide service to 2,050 additional households. About 15,200 people in the region rely on private domestic water systems: 6,600 on wells and 8,600 on hauled water and other sources.

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

County	1997 Pop	On Public	2020 Pop	On Public
Bracken	8,300	5,800 (70%)	8,550	7,350 (86%)
Fleming	13,300	10,600 (80%)	14,400	11,700 (81%)
Lewis	13,700	6,800 (50%)	15,100	9,800 (65%)
Mason	16,700	14,200 (85%)	15,600	13,900 (89%)
Robertson	2,160	1,300 (60%)	2,030	1,540 (76%)
<i>Region</i>	<i>54,100</i>	<i>38,700 (72%)</i>	<i>55,700</i>	<i>44,300 (82%)</i>

13 public water systems serve the region: 6 municipal, 6 water districts, and 1 water association. Eight of these systems are small (501 to 3,300 people served).



EXISTING & PROPOSED WATER LINES BTADD 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/wrde/>



WATER LINES

- Existing Water Lines
- Proposed Water Lines

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

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
BRACKEN								-
Bracken Co. W/D	57.5	300	2,300			1,350	850	4,500
BRACKEN TOTAL	57.5	300	2,300			1,350	850	4,500
FLEMING								-
Fleming W/D	Current Project Funded							-
Western Fleming W/D	13.7	69	548					548
FLEMING TOTAL	13.7	69	548					548
LEWIS								-
Garrison-Quincy Hts. W/D	16.2	142	1,000					1,000
Western Lewis Rectorville	39.9	250	1,995				425	2,420
Vanceburg Electric Board	57.3	325	2,292		418		850	3,560
LEWIS TOTAL	113.4	717	5,287		418		1,275	6,980
MASON								-
Western Mason W/D	19.6	98	784				45	829
MASON TOTAL	19.6	98	784				45	829
ROBERTSON								-
Buffalo Trail Water Association	23.2	149	1,000					1,000
ROBERTSON TOTAL	23.2	149	1,000					1,000
BUFFALO TRACE ADD TOTAL	227	1,333	9,919	-	418	1,350	2,170	13,857

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
BRACKEN								-
Bracken Co. W/D	63.7	283	2,572					2,572
BRACKEN TOTAL	63.7	283	2,572					2,572
LEWIS								-
Western Lewis Rectorville W/D	47.9	240	2,395				1,000	3,395
LEWIS TOTAL	47.9	240	2,395				1,000	3,395
MASON								-
Southern Mason W/D	6.2	31	250					250
Western Mason W/D	30.6	153	1,224					1,224
MASON TOTAL	36.8	184	1,474					1,474
BUFFALO TRACE ADD TOTAL	148	707	6,441	-	-	-	1,000	7,441

BRACKEN COUNTY

(Bracken County Water Service Area Map)

- Estimated 1999 population of 8,300--70% on public water
- Estimated 2020 population of 8,550--86% on public water
- 175 miles of water lines, with plans for 120 additional miles
- Estimated funding needs for public water 2000-2005: \$4,500,000
- Estimated funding needs for public water 2006-2020: \$2,572,000

Brackent County had an estimated population of 8,280 (3,392 households) in 1999 with a projected population of 8,547 (3,728 households) in 2020. Public water is provided to about 70 percent of the county's residents. In areas of the county not served by public water, about 1/6 of the households rely on private domestic wells and 5/6 of the households rely on hauled water, cisterns and other sources. About 580 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
BRACKEN								-
Bracken Co. W/D	57.5	300	2,300			1,350	850	4,500
BRACKEN TOTAL	57.5	300	2,300			1,350	850	4,500

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
BRACKEN								-
Bracken Co. W/D	63.7	283	2,572					2,572
BRACKEN TOTAL	63.7	283	2,572					2,572

PUBLIC WATER SYSTEMS

Bracken County has 3 public water systems: 2 municipal systems, Augusta Regional Water Treatment Plant and Brooksville Utility; and 1 water district, Bracken County Water District. A few residents of the county are also served by Buffalo Trail Water District and Western Mason Water District.

WATER SERVICE AREAS

BRACKEN 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/>

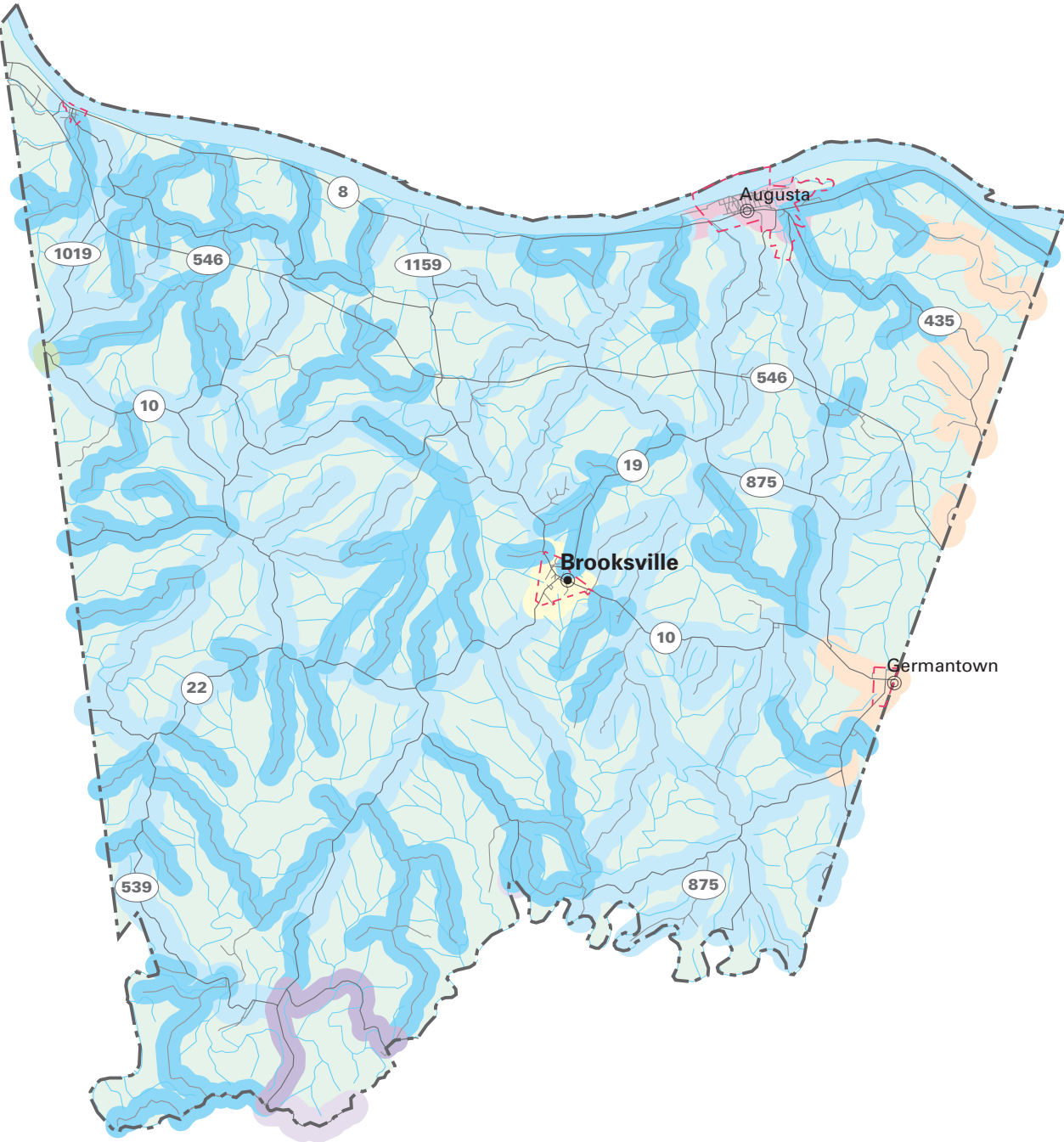
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Lawrence Wetherby, Executive Director



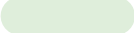
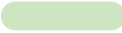


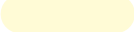

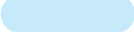



Final GIS & Cartographic Operations By:
Kent Anness & Kim Prough

Data Collection & GIS Input By:
Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER		
EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		WESTERN MASON WATER DISTRICT
		EAST PENDLETON WATER DISTRICT
		BUFFALO TRAIL WATER ASSOCIATION
		BROOKSVILLE UTILITY
		BRACKEN COUNTY WATER DISTRICT
		AUGUSTA REGIONAL WTP



AUGUSTA REGIONAL WATER TREATMENT PLANT

PWSID: 0120013
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source:
 Purchase Source:
 Well Source: Yes
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.70
 Percent Daily Average Production: 93.00
 Total Tank Storage Capacity (gallons): 300,000.00
 Total Service Connections: 2,039.00
 Number of Employees: 3.00
 Treatment Operator Class: 2D
 Distribution Operator Class: 3B
 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

Augusta Regional Water Treatment Plant is located in Bracken County and was put into service in 1997. The regional plant provides water to the City of Augusta and Bracken County Water District. The Water District resells to the City of Brooksville. There does not seem to be any problems with the WTP providing adequate supply for future growth.

BRACKEN COUNTY WATER DISTRICT

PWSID: 0120039
 System Type: COMMUNITY
 Owner Type: WATER DISTRICT
 Surface Source:
 Purchase Source: AUGUSTA REGIONAL WTP
 Well Source:
 Sells Water to: BROOKSVILLE UTILITY
 Treatment Plant Capacity (MGD): 0.29
 Percent Daily Average Production: 0.00
 Total Tank Storage Capacity (gallons): 300,000.00
 Total Service Connections: 1,534.00
 Number of Employees: 4.00
 Treatment Operator Class: 2D
 Distribution Operator Class: 2BD
 Customer Rate for 1,000 Gallons: 2.99
 O/M costs 1997: 348,731.00
 O/M costs per Service Connection: 249.27
 Net Revenue 1997: 15,014.00
 Total Water Produced 1997 (gallons): 0.00
 Water Sold 1997 (gallons): 126,726,000.00
 Unaccounted-for Water 1997 (%): 12.28

The Bracken County Water District currently has two waterline extension projects underway. One is funded through a Community Development Block Grant for scattered extensions. The second project was funded through State Surplus Funds awarded to the County. This project will alleviate a bottleneck problem that exists between the system's two (2) divisions by increasing line size. The Western division, through its current waterlines, cannot provide adequate flow to its customers because of undersized waterlines.

The district has applied for funding for approximately 57.5 miles of additional line extensions. To date, the funds have not been awarded. Three (3) long-term projects are also identified. They consist of approximately 64 miles of waterline. There were 88 households identified as not practical and alternative systems were recommended.

BROOKSVILLE UTILITY

PWSID: 0120044
System Type:..... COMMUNITY
Owner Type: MUNICIPAL
Surface Source:
Purchase Source: BRACKEN COUNTY WATER DISTRICT
Well Source:
Sells Water to:
Treatment Plant Capacity (MGD):..... 0.00
Percent Daily Average Production:..... 0.00
Total Tank Storage Capacity (gallons): 50,000.00
Total Service Connections: 327.00
Number of Employees:..... 2.00
Treatment Operator Class: 1D
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

PRIVATE DOMESTIC SYSTEMS

About 2,450 residents of Bracken County rely on private domestic water supplies: about 450 on wells and 2,000 on other sources.

The alluvium along the Ohio River is the best source of ground water in the county. Many properly constructed drilled wells will produce several hundred gallons per minute from the

alluvium, with most wells able to produce enough for a domestic supply at depths of less than 100 feet. Water is hard or very hard but otherwise of good quality.

In the lower third of the Licking River valley and the lower sections of the larger creek valleys discharging into the Ohio River in Bracken County most drilled wells will produce enough water for a domestic supply at depths of less than 100 feet. Some wells located in the major creek valleys will produce enough water for a domestic supply except during dry weather. In the upland areas of Bracken County, which encompasses 80% of the county, most drilled wells will not produce enough water for a dependable domestic supply except along drainage lines that may produce enough water except during dry weather. Ground water in these areas is hard or very hard and may contain salt or hydrogen sulfide, especially at depths greater than 100 feet.

FLEMING COUNTY

(Fleming County Water Service Area Map)

- Estimated 1999 population of 13,300--80% on public water
- Estimated 2020 population of 14,400--81% on public water
- 435 miles of water lines, with plans for 14 additional miles
- Estimated funding needs for public water 2000-2005: \$548,000
- Estimated funding needs for public water 2006-2020: \$0

Fleming County had an estimated population of 13,289 (5,475 households) in 1999 with a projected population of 14,411 (6,404 households) in 2020. Public water is provided to about 80 percent of the county's residents. In areas of the county not served by public water, about half the households rely on private domestic wells and half of the households rely on hauled water, cisterns and other sources. About 70 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
FLEMING								-
Fleming W/D	Current	project	funded					-
Western Fleming W/D	13.7	69	548					548
FLEMING TOTAL	13.7	69	548					548

PUBLIC WATER SYSTEMS

Three water systems, Fleming County Water Association, Western Fleming Water District and the City of Flemingsburg serve Fleming County. A newly created entity, the Greater Fleming County Regional Water Commission, also exists and was formed for the sole purpose of creating a new regional water supply. A few residents in the county may also be served by Bath County Water District, Buffalo Trail Water District, Rowan County Water District, Sharpsburg Water District, Southern Mason Water District, and Western Lewis Rectorville Water District.

WATER SERVICE AREAS

FLEMING 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/>

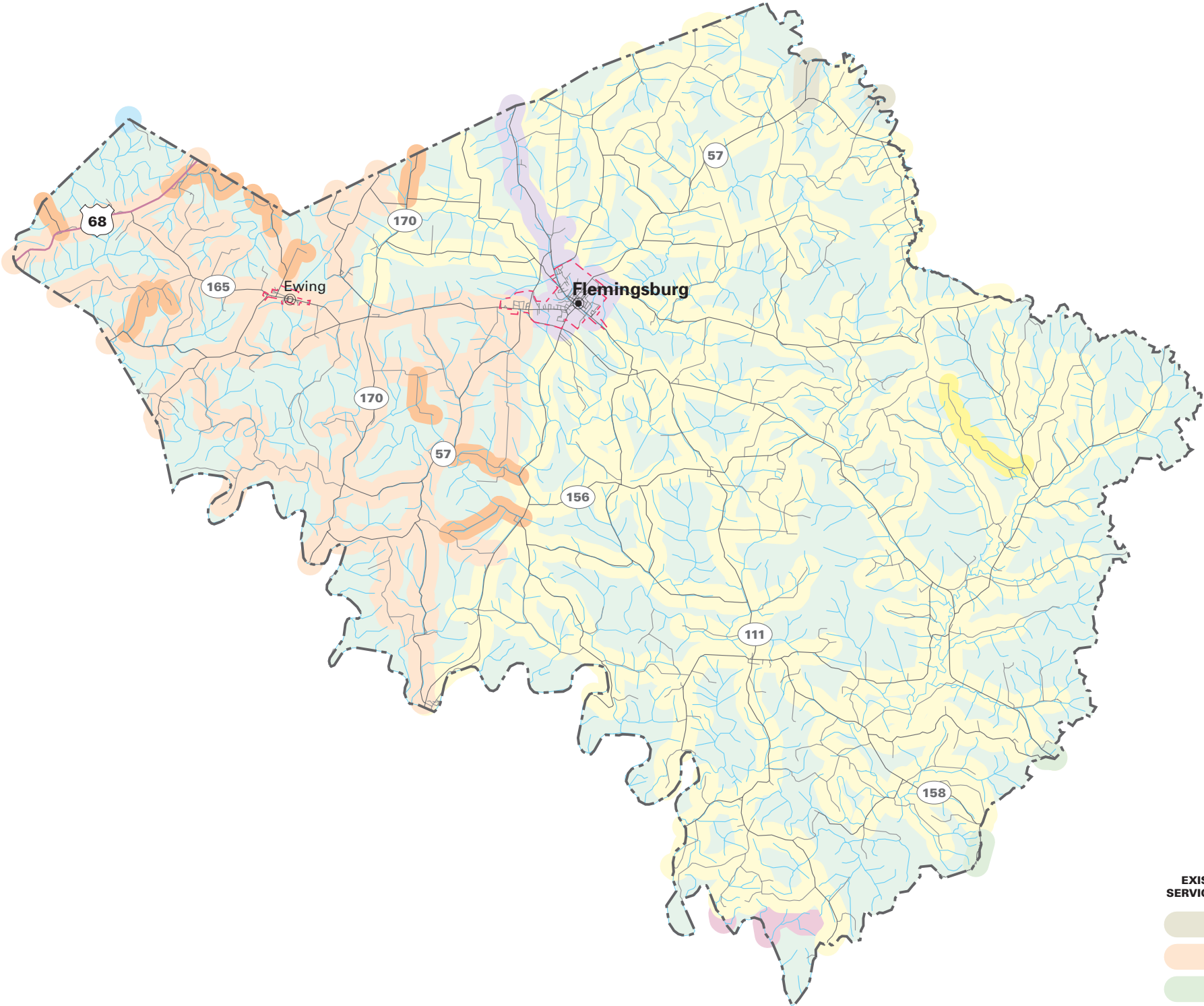
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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		WESTERN LEWIS RECTORVILLE WATER DISTRICT
		WESTERN FLEMING WATER DISTRICT
		ROWAN COUNTY WATER DISTRICT
		FLEMINGSBURG UTILITY SYSTEM
		FLEMING COUNTY WATER ASSOCIATION
		BUFFALO TRAIL WATER ASSOCIATION
		BATH COUNTY WATER DISTRICT



FLEMING COUNTY WATER ASSOCIATION

PWSID: 0350133
 System Type:..... COMMUNITY
 Owner Type:..... WATER ASSOCIATION
 Surface Source:
 Purchase Source:FLEMINGSBURG UTILITY SYSTEM
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 0.00
 Percent Daily Average Production:..... 0.00
 Total Tank Storage Capacity (gallons):..... 184,000.00
 Total Service Connections: 2,669.00
 Number of Employees:..... 7.00
 Treatment Operator Class:2D
 Distribution Operator Class:
 Customer Rate for 1,000 Gallons:..... 5.64
 O/M costs 1997:..... 647,862.00
 O/M costs per Service Connection: 228.04
 Net Revenue 1997:..... 39,784.00
 Total Water Produced 1997 (gallons):..... 0.00
 Water Sold 1997 (gallons):..... 167,921,000.00
 Unaccounted-for Water 1997 (%): 11.46

Fleming County Water Association has recently received Rural Development funding for their immediate project, consisting of approximately 22 miles of waterline. The Water Association with the completion of this project will have effectively served its boundaries. Twenty households have been identified as not feasible and a non-traditional system is required. The Water Association purchases all of its water from other water systems. During periods of drought, the association is vulnerable to water shortages.

A feasibility study was conducted for the area to explore options for a new source supply. The study, conducted by Quest Engineers, recommended the formation of the Greater Fleming County Regional Water Commission (GFCRWC) and that a well field be constructed in northern Lewis County along the Ohio River. The GFCRWC currently has land under option and test wells have been constructed. The GFCRWC currently has applications for funding filed with various federal and state agencies to implement the project.

FLEMINGSBURG UTILITY SYSTEM

PWSID: 0350134
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source: RESERVOIR
 Purchase Source: MAYSVILLE UTILITY COMMISSION
 Well Source:
 Sells Water to: FLEMING COUNTY WATER ASSOCIATION
 Treatment Plant Capacity (MGD): 0.72
 Percent Daily Average Production: 63.00
 Total Tank Storage Capacity (gallons): 150,000.00
 Total Service Connections: 1,450.00
 Number of Employees: 10.00
 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

Flemingsburg Utilities serve Flemingsburg and currently provides water service to all households. The city utilizes two (2) reservoirs as a source supply in addition to a 12-inch supply line from Maysville Utilities.

WESTERN FLEMING WATER DISTRICT

Western Fleming Water District has identified a short-term project of approximately 13.7 miles to serve 69 new customers. Approximately 40 households were identified as not feasible for a traditional delivery system. The District operates a treatment plant located on the Licking River. The plant has adequate capacity, but in times of drought the flow of the Licking River drops to a point where the district's plant has intake problems. The district's treatment plant also provides water to Buffalo Trail Water Association, located in Mason and Robertson Counties.

Western Fleming Water District has 975 service connections. The system has treatment capacity of 1,000,080 gallons per day and storage capacity of 1,542,000 gallons. The water source is Licking River. The charge for the first 5,000 gallons of water was \$21.50. The system produced 277,180,000 gallons, and sold 225,843,000 gallons for 1997. Overall system losses were 17% for the same period

PRIVATE DOMESTIC SYSTEMS

About 2,600 residents of Fleming County rely on private domestic water supplies: about 1,300 on wells and 1,300 on other sources.

Some wells located in the Licking River valley and the major creek valleys will produce enough water for a domestic supply except during dry weather. In the upland areas of Rowan County, which encompasses 70% of the county, most drilled wells will not produce enough water for a dependable domestic supply except along drainage lines that may produce enough water except during dry weather.

Throughout the county ground water is hard or very hard and may contain salt or hydrogen sulfide, especially at depths greater than 100 feet.

LEWIS COUNTY

(Lewis County Water Service Area Map)

- Estimated 1999 population of 13,700--50% on public water
- Estimated 2020 population of 15,100--65% on public water
- 165 miles of water lines, with plans for 115 additional miles
- Estimated funding needs for public water 2000-2005: \$6,980,000
- Estimated funding needs for public water 2006-2020: \$3,395,000

Lewis County had an estimated population of 13,668 (5,398 households) in 1999 with a projected population of 15,073 (6,326 households) in 2020. Public water is provided to about 50 percent of the county's residents. In areas of the county not served by public water, about 5/8 of the households rely on private domestic wells and 3/8 of the households rely on hauled water, cisterns and other sources. About 960 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
LEWIS								-
Garrison-Quincy Hts. W/D	16.2	142	1,000					1,000
Western Lewis Rectorville	39.9	250	1,995				425	2,420
Vanceburg Electric Board	57.3	325	2,292		418		850	3,560
LEWIS TOTAL	113.4	717	5,287		418		1,275	6,980

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
LEWIS								-
Western Lewis Rectorville W/D	47.9	240	2,395				1,000	3,395
LEWIS TOTAL	47.9	240	2,395				1,000	3,395

PUBLIC WATER SYSTEMS

There are 2 public water systems in Lewis County: 1 municipal, Vanceburg Electric Plant Board; and 1 water district, Garrison Quincy Heights Water District. A few residents in the county may also be served by Fleming County Water Association, Western Lewis Rectorville Water District, and South Shore Water Works, Inc. Lewis County, because of its physical

WATER SERVICE AREAS

LEWIS COUNTY

Kentucky

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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
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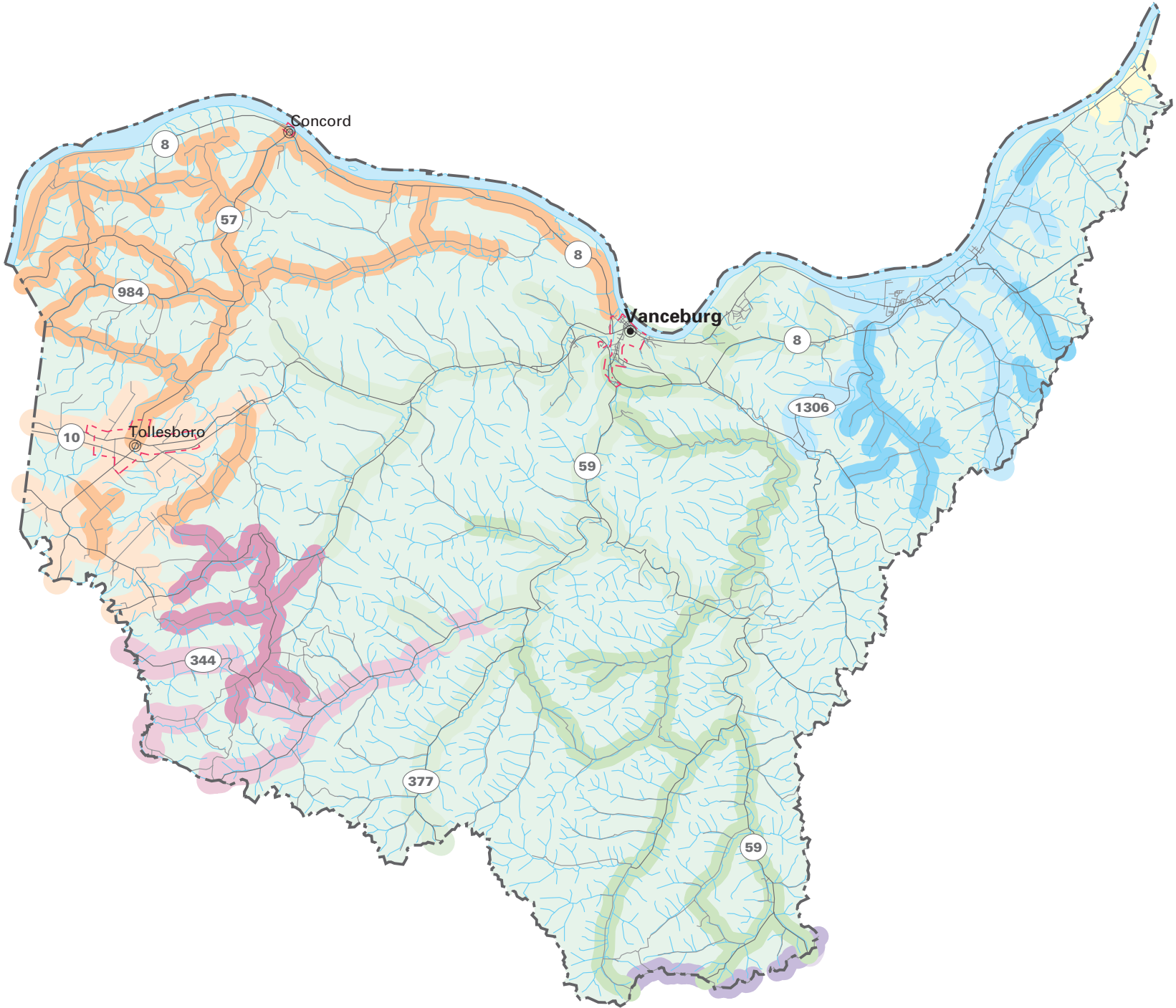
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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		WESTERN LEWIS RECTORVILLE WATER DISTRICT
		VANCEBURG ELECTRIC PLANT BOARD
		RATTLESNAKE RIDGE WATER DISTRICT
		JOE HANNAH
		GARRISON QUINCY HGTS WATER DIST
		FLEMING COUNTY WATER ASSOCIATION

size, (484 square miles) and low population (13,029) contains more areas not feasible for traditional waterlines than the other four BTADD counties.

GARRISON QUINCY HEIGHTS WATER DISTRICT

PWSID: 0680153
 System Type: COMMUNITY
 Owner Type: WATER DISTRICT
 Surface Source:
 Purchase Source:
 Well Source: Yes
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.29
 Percent Daily Average Production: 56.00
 Total Tank Storage Capacity (gallons): 105,000.00
 Total Service Connections: 604.00
 Number of Employees: 2.00
 Treatment Operator Class:
 Distribution Operator Class: 2BD
 Customer Rate for 1,000 Gallons: 4.66
 O/M costs 1997: 113,011.00
 O/M costs per Service Connection: 146.20
 Net Revenue 1997: 23,808.00
 Total Water Produced 1997 (gallons): 5,109,000.00
 Water Sold 1997 (gallons): 37,565,000.00
 Unaccounted-for Water 1997 (%): 9.38

Garrison-Quincy Heights Water District serves the eastern portion of Lewis County.

Garrison-Quincy Water District has identified approximately 16 miles of waterline to serve about 142 households. Currently the district gets its water from wells. The District has also identified 80 households as not feasible for traditional delivery systems.

VANCEBURG ELECTRIC PLANT BOARD

PWSID: 0680438
 System Type: COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source:
 Purchase Source:
 Well Source: Yes
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.86
 Percent Daily Average Production: 75.00
 Total Tank Storage Capacity (gallons): 150,000.00
 Total Service Connections: 2,000.00
 Number of Employees: 5.00
 Treatment Operator Class: 2D
 Distribution Operator Class: 3B
 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

Vanceburg Electric Plant Board has identified two (2) projects as “immediate” these include approximately 57 Miles of waterline to serve approximately 355 new customers. The Electric Plant Board currently utilizes wells as a source. The Plant Board also identified 436 households as not feasible for traditional delivery systems.

WESTERN LEWIS RECTORVILLE WATER DISTRICT

Western Lewis Rectorville Water District, which serves both Mason and Lewis Counties, currently has a grant application under review for approximately 29 miles of waterline, which includes a 200,000 gallon water tank. Additional immediate projects listed include approximately 60 miles of new waterlines serving approximately 285 households in both Lewis and Mason Counties. The District has identified 160 households in both Lewis and Mason Counties as needing non-traditional delivery systems. Western Lewis Rectorville Water District’s source is wells and has a green sand filter treatment plant. The District also purchases water from Maysville.

PRIVATE DOMESTIC SYSTEMS

About 6,750 residents of Lewis County rely on private domestic water supplies: about 4,200 on wells and 2,550 on other sources.

The alluvium along the Ohio River is the best source of ground water in the county. Many properly constructed drilled wells will produce several hundred gallons per minute from the alluvium, with most wells able to produce enough for a domestic supply at depths of less than 100 feet. Water is hard or very hard but otherwise of good quality.

Some wells located in the major creek valleys will produce enough water for a domestic supply except during dry weather. In the upland areas of Lewis County, which encompasses 90% of the county, most drilled wells will not produce enough water for a dependable domestic supply except along drainage lines that may produce enough water except during

dry weather. Ground water in these areas is hard or very hard and may contain salt or hydrogen sulfide, especially at depths greater than 100 feet.

MASON COUNTY

(Mason County Water Service Area Map)

- Estimated 1999 population of 16,700--85% on public water
- Estimated 2020 population of 15,600--89% on public water
- 280 miles of water lines, with plans for 57 additional miles
- Estimated funding needs for public water 2000-2005: \$829,000
- Estimated funding needs for public water 2006-2020: \$1,474,000

Mason County had an estimated population of 16,661 (6,854 households) in 1999 with a projected population of 15,606 (6,896 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, about 1/5 of the households rely on private domestic wells and 4/5 of the households rely on hauled water, cisterns and other sources. About 285 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
MASON								-
Western Mason W/D	19.6	98	784				45	829
MASON TOTAL	19.6	98	784				45	829

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
MASON								-
Southern Mason W/D	6.2	31	250					250
Western Mason W/D	30.6	153	1,224					1,224
MASON TOTAL	36.8	184	1,474					1,474

PUBLIC WATER SYSTEMS

Mason County is served by six water systems: Maysville Utilities, Western Lewis Rectorville Water District, Western Mason Water District, Southern Mason Water District, Buffalo Trail Water Association and Fleming County Water Association.

WATER SERVICE AREAS

MASON 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/>

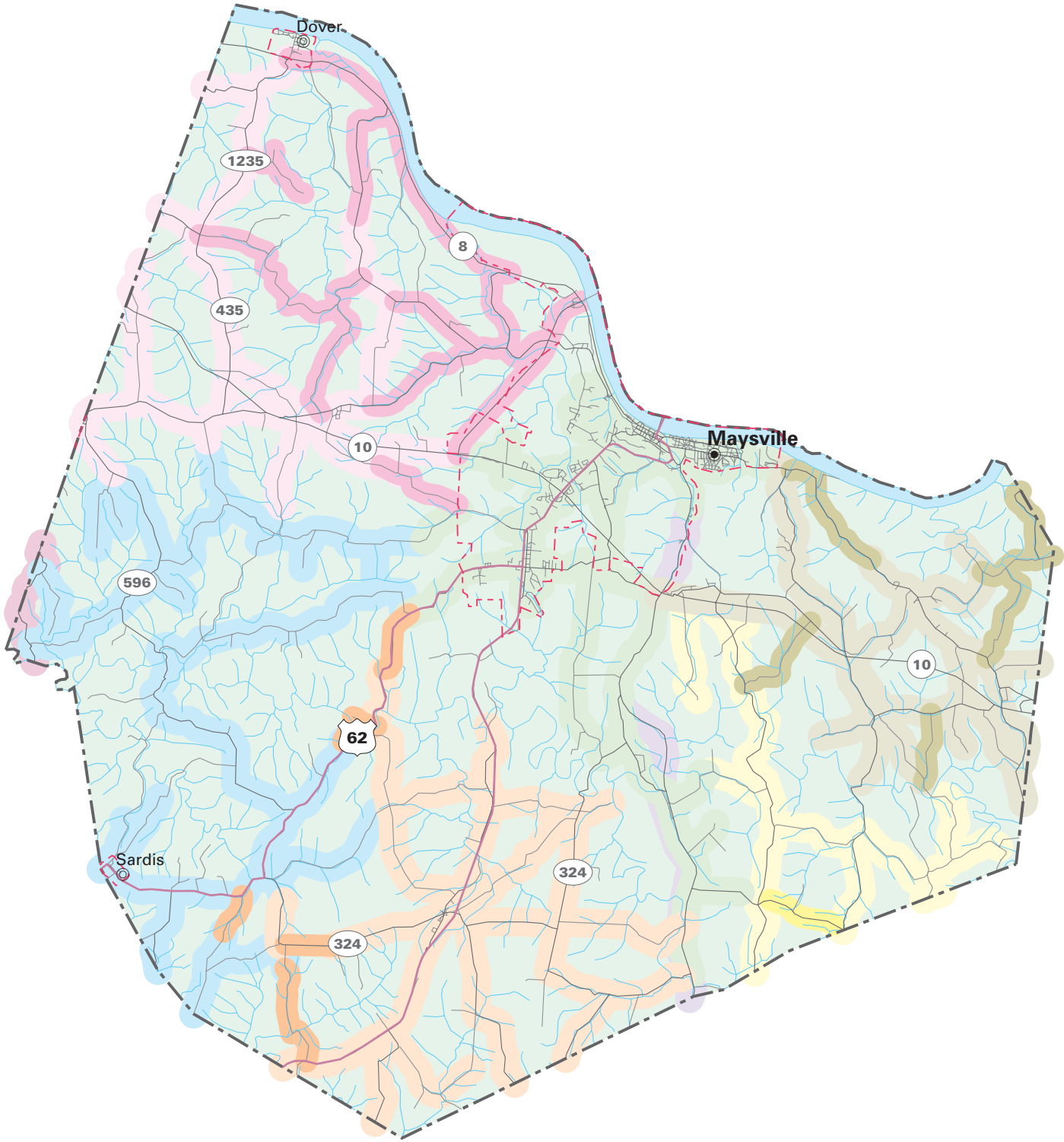
Bob Arnold, Chairman
Lawrence Wetherby, Executive Director

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	
		WESTERN MASON WATER DISTRICT
		WESTERN LEWIS RECTORVILLE WATER DISTRICT
		SOUTHERN MASON WATER DISTRICT
		MAYSVILLE UTILITY COMMISSION
		FLEMINGSBURG UTILITY SYSTEM
		FLEMING COUNTY WATER ASSOCIATION
		BUFFALO TRAIL WATER ASSOCIATION
		BRACKEN COUNTY WATER DISTRICT

MAYSVILLE UTILITY COMMISSION

PWSID: 0810275
 System Type: COMMUNITY
 Owner Type: WATER DISTRICT
 Surface Source: RESERVOIR
 Purchase Source:
 Well Source:
 Sells Water to: FLEMINGSBURG UTILITY SYSTEM
 Treatment Plant Capacity (MGD): 4.00
 Percent Daily Average Production: 62.00
 Total Tank Storage Capacity (gallons): 10,000.00
 Total Service Connections: 4,968.00
 Number of Employees: 0.00
 Treatment Operator Class: 2D
 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

Maysville Utilities serves the entire corporate limits of Maysville and some areas outside the city limits. Maysville Utilities also sells water to the City of Flemingsburg, Western Lewis Rectorville Water District, Buffalo Trail Water Association, Southern Mason Water District and Western Mason Water District.

Maysville has not identified any line extension projects, but realizes approximately 9 households are located outside city limits and are not practical for a traditional delivery system. Maysville's source is the Ohio River.

SOUTHERN MASON WATER DISTRICT

PWSID: 0810409
 System Type: COMMUNITY
 Owner Type: WATER DISTRICT
 Surface Source: LICKING RIVER
 Purchase Source: WESTERN FLEMING WATER DISTRICT
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.00
 Percent Daily Average Production: 0.00
 Total Tank Storage Capacity (gallons): 25,000.00
 Total Service Connections: 531.00
 Number of Employees: 2.00
 Treatment Operator Class: 2D
 Distribution Operator Class:

Customer Rate for 1,000 Gallons:.....	4.60
O/M costs 1997:.....	181,219.00
O/M costs per Service Connection:	359.56
Net Revenue 1997:.....	53,378.00
Total Water Produced 1997 (gallons):.....	0.00
Water Sold 1997 (gallons):.....	44,095,000.00
Unaccounted-for Water 1997 (%):	23.90

Southern Mason Water District serves the southern portion of Mason County and includes the community of May's Lick. The District purchases all of its water. Southern Mason has water purchase agreements with both Maysville and Western Fleming Water District. Approximately 6.2 miles of scattered extensions serving 31 households were identified as a long-term project. Twenty-eight households were deemed not practical for normal line extension projects.

WESTERN MASON COUNTY WATER DISTRICT

PWSID:.....	0810460
System Type:.....	COMMUNITY
Owner Type:.....	WATER DISTRICT
Surface Source:	
Purchase Source:	
Well Source:	Yes
Sells Water to:	
Treatment Plant Capacity (MGD):.....	0.31
Percent Daily Average Production:.....	59.00
Total Tank Storage Capacity (gallons):	50,000.00
Total Service Connections:	675.00
Number of Employees:.....	2.00
Treatment Operator Class:	
Distribution Operator Class:.....	2BD
Customer Rate for 1,000 Gallons:.....	2.52
O/M costs 1997:.....	134,554.00
O/M costs per Service Connection:	164.49
Net Revenue 1997:.....	11,625.00
Total Water Produced 1997 (gallons):.....	76,447,000.00
Water Sold 1997 (gallons):.....	73,710,600.00
Unaccounted-for Water 1997 (%):	2.27

Western Mason Water District is located within the City of Dover. Western Mason serves the western portion of Mason County. Currently the District gets its water from wells located in Dover. The District also purchases some water from Maysville. The District does not have treatment, but it does add chlorine to the water. Western Mason has filed an application for federal funding for approximately 19.6 miles serving 98 new households. Approximately 30.6 miles are identified as long-term extensions, which include 153

households. Thirty-six (36) households were identified as not feasible and require a non-traditional delivery system.

WESTERN LEWIS RECTORVILLE WATER DISTRICT

PWSID: 0810366
 System Type: COMMUNITY
 Owner Type: WATER DISTRICT
 Surface Source:
 Purchase Source: MAYSVILLE UTILITY COMMISSION
 Well Source: Yes
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.29
 Percent Daily Average Production: 84.00
 Total Tank Storage Capacity (gallons): 100,000.00
 Total Service Connections: 1,050.00
 Number of Employees: 6.00
 Treatment Operator Class:
 Distribution Operator Class: 2BD
 Customer Rate for 1,000 Gallons: 4.76
 O/M costs 1997: 353,895.00
 O/M costs per Service Connection: 278.00
 Net Revenue 1997: 147,801.00
 Total Water Produced 1997 (gallons): 108,236,000.00
 Water Sold 1997 (gallons): 75,943,000.00
 Unaccounted-for Water 1997 (%): 24.59

Western Lewis Rectorville Water District located in eastern Mason County and Western Lewis County has identified projects in both Mason and Lewis Counties. See narrative in Lewis County section.

BUFFALO TRAIL WATER ASSOCIATION

PWSID: 0810046
 System Type: COMMUNITY
 Owner Type: WATER ASSOCIATION
 Surface Source:
 Purchase Source: WESTERN FLEMING WATER DISTRICT
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD): 0.00
 Percent Daily Average Production: 0.00
 Total Tank Storage Capacity (gallons): 200,000.00
 Total Service Connections: 0.00
 Number of Employees: 0.00
 Treatment Operator Class: 2D
 Distribution Operator Class:
 Customer Rate for 1,000 Gallons: 5.91
 O/M costs 1997: 198,935.00
 O/M costs per Service Connection: 248.67
 Net Revenue 1997: 8,827.00

Total Water Produced 1997 (gallons):..... 0.00
Water Sold 1997 (gallons):..... 71,482,000.00
Unaccounted-for Water 1997 (%): 28.18

Buffalo Trail Water Association located in Sardis, Kentucky, serves both Mason and Robertson Counties. Approximately 23 miles of scattered extensions, located in both Mason and Robertson Counties, to serve 149 households has been identified as immediate projects. 70 households all located in Robertson County has been identified as not feasible for traditional line extensions.

FLEMING COUNTY WATER ASSOCIATION

Fleming County Water Association also serves some Mason County residents. Fleming County Water does not plan to add any new lines in Mason County.

PRIVATE DOMESTIC SYSTEMS

About 2,500 residents of Mason County rely on private domestic water supplies: about 500 on wells and 2,000 on other sources.

The alluvium along the Ohio River is the best source of ground water in the county. Many properly constructed drilled wells will produce several hundred gallons per minute from the alluvium, with most wells able to produce enough for a domestic supply at depths of less than 100 feet. Water is hard or very hard but otherwise of good quality.

In the lower sections of the larger creek valleys discharging into the Ohio River in Mason County most drilled wells will produce enough water for a domestic supply at depths of less than 100 feet. Some wells located in the major creek valleys will produce enough water for a domestic supply except during dry weather. In the upland areas of Bracken County, which encompasses 70% of the county, most drilled wells will not produce enough water for a dependable domestic supply except along drainage lines that may produce enough water except during dry weather. Ground water in these areas is hard or very hard and may contain salt or hydrogen sulfide, especially at depths greater than 100 feet.

ROBERTSON COUNTY

(Robertson County Water Service Area Map)

- Estimated 1999 population of 2,160--60% on public water
- Estimated 2020 population of 2,030--76% on public water
- 100 miles of water lines, with plans for 23 additional miles
- Estimated funding needs for public water 2000-2005: \$1,000,000
- Estimated funding needs for public water 2006-2020: \$0

Robertson County had an estimated population of 2,162 (935 households) in 1999 with a projected population of 2,027 (931 households) in 2020. Public water is provided to about 60% percent of the county's residents. In areas of the county not served by public water, about 1/5 of the households rely on private domestic wells and 4/5 of the households rely on hauled water, cisterns and other sources. About 149 customers will be added to public water service through new line extensions in 2000-2020.

Robertson County is served by two water systems: Buffalo Trail Water Association and Mt. Olivet Utilities. Buffalo Trail Water Association gets its water from the Western Fleming Water Treatment Plant. Buffalo Trail Water retains part ownership in the Western Fleming plant. Buffalo Trail also sells water to Mt. Olivet. As was stated in Mason County's section, Buffalo Trail Water has identified approximately 23 miles of waterline as a short-term project. Also 70 households located in Robertson County were identified as not feasible for conventional water line extensions.

Mt. Olivet buys all of its water from Buffalo Trail. Mt. Olivet currently serves the entire city limits and some households slightly outside the City. The City has not identified any new households to be served.

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
ROBERTSON								-
Buffalo Trail Water Association	23.2	149	1,000					1,000
ROBERTSON TOTAL	23.2	149	1,000					1,000

WATER SERVICE AREAS

ROBERTSON 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/>

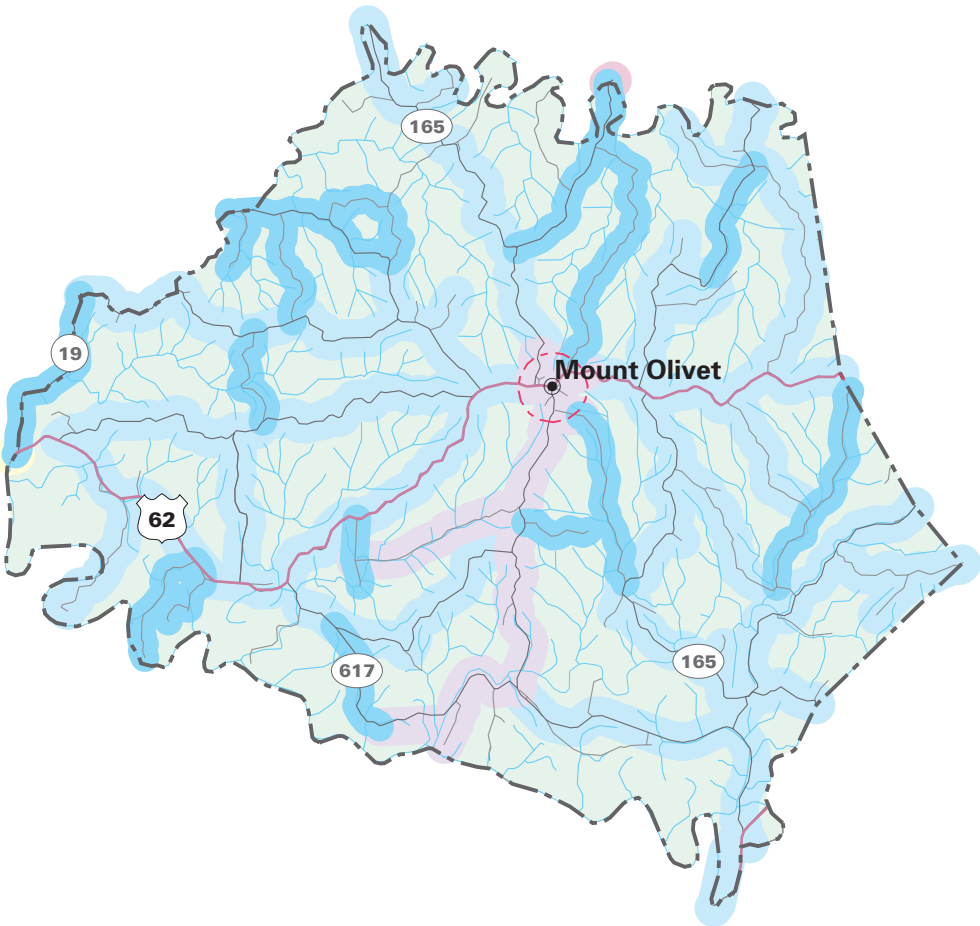
Bob Arnold, Chairman
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Final GIS & Cartographic Operations By:
Kent Anness & Kim Prough



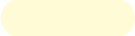

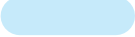



Data Collection & GIS Input By:
Kentucky Area Development Districts



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WATER SERVICE STATUS BY OWNER

EXISTING SERVICE AREA	PROPOSED SERVICE AREA	
		MOUNT OLIVET WATER DEPARTMENT
		HARRISON COUNTY WATER ASSOCIATION
		BUFFALO TRAIL WATER ASSOCIATION
		BRACKEN COUNTY WATER DISTRICT

PUBLIC WATER SYSTEMS

Robertson County is served by two water systems: Buffalo Trail Water Association and Mt. Olivet Utilities.

MOUNT OLIVET WATER DEPARTMENT

PWSID: 1010297
 System Type:..... COMMUNITY
 Owner Type: MUNICIPAL
 Surface Source:..... LICKING RIVER
 Purchase Source:
 Well Source:
 Sells Water to:
 Treatment Plant Capacity (MGD):..... 0.20
 Percent Daily Average Production:..... 0.00
 Total Tank Storage Capacity (gallons): 100,000.00
 Total Service Connections: 270.00
 Number of Employees:..... 2.50
 Treatment Operator Class: 1D
 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

Mt. Olivet Water Department is located in Robertson County. Mt. Olivet buys all of its water from Buffalo Trail. Mt. Olivet currently serves the entire city limits and some households slightly outside the City. The City has not identified any new households to be served.

BUFFALO TRAIL WATER ASSOCIATION

The Buffalo Trail Water Association serves most of Robertson County. The system has 550 service connections. Water is purchased from Western Fleming Water District.

Buffalo Trail Water retains part ownership in the Western Fleming plant. Buffalo Trail also sells water to Mt. Olivet. As was stated in Mason County's section, Buffalo Trail Water has identified approximately 23 miles of waterline as a short-term project. Also 70 households located in Robertson County were identified as not feasible for conventional water line extensions.

PRIVATE DOMESTIC SYSTEMS

About 870 residents of Robertson County rely on private domestic water supplies: about 170 on wells and 700 on other sources.

In the Licking River valley most drilled wells will produce enough water for a domestic supply at depths of less than 100 feet. Wells located in the major creek valleys will produce enough water for a domestic supply except during dry weather. In the upland areas of Robinson County, which encompasses 90% of the county, most drilled wells will not produce enough water for a dependable domestic supply except along drainage lines that may produce enough water except during dry weather.

Throughout the county ground water is hard or very hard and may contain salt or hydrogen sulfide, especially at depths greater than 100 feet.