PENDLETON COUNTY
WATER SUPPLY PLAN

PLAN FORMULATION DOCUMENT

AND

FINAL PLAN DOCUMENT

Prepared by the Northern Kentucky Area Development District
Revised Spring 2002

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CHAPTER 1
DESCRIPTION OF THE PLANNING UNIT

I. Introduction

Pendleton County, located in northern Kentucky, has a land area of 280 square miles. The county seat, Falmouth, is located approximately 37 miles south of Cincinnati, Ohio and 56 miles northeast of Lexington, Kentucky.

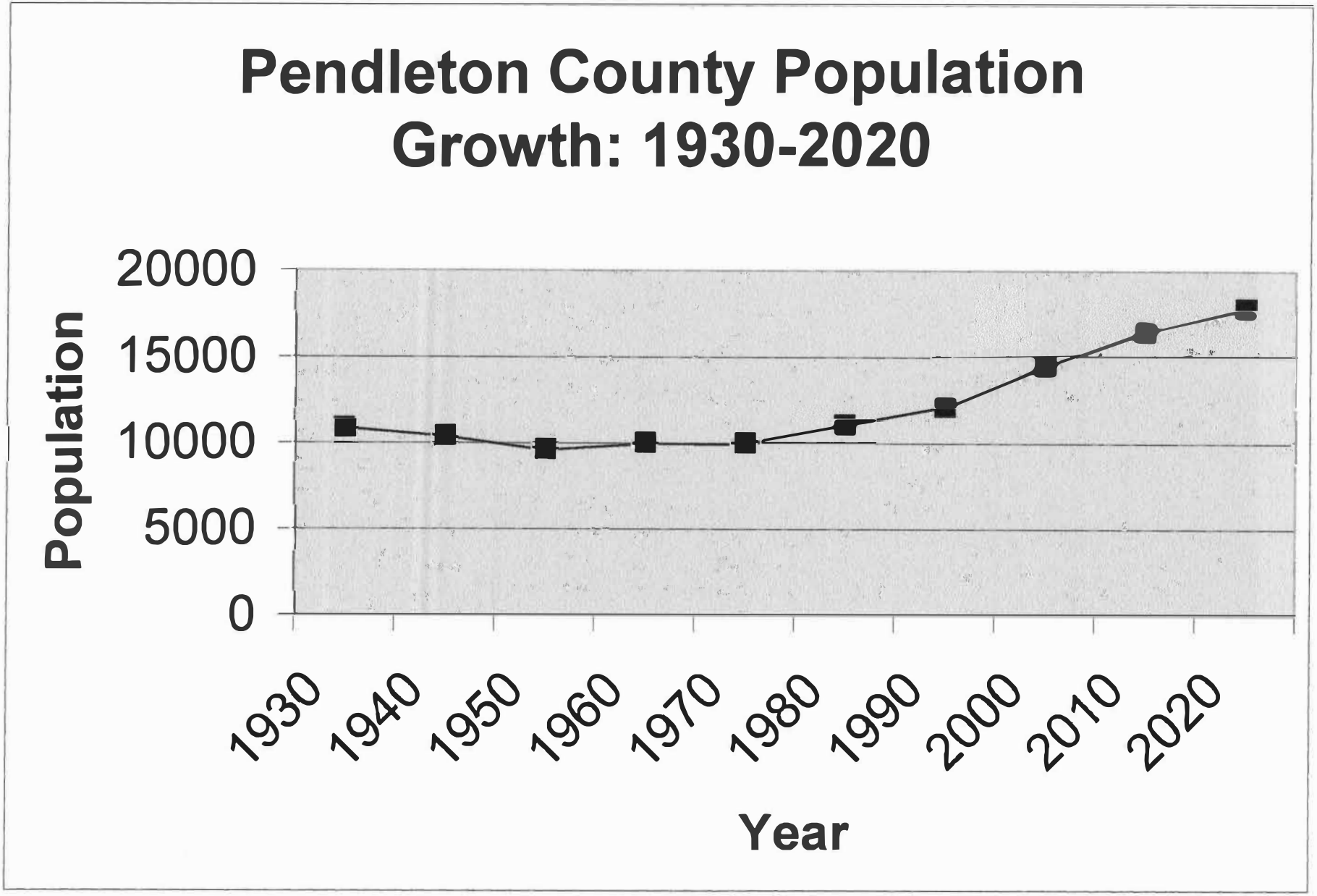
Pendleton County's 2000 population was estimated at 14,390, an increase of 19.3 percent since 1990. Recent population projections show this growth continuing with a projected 2020 population of 17,675 (Figure 1.1) 1996 employment in the county averaged 2,328. The largest 1996 employment sector was state/local government followed by wholesale/retail trade.

Highways serving the area are U.S. 27, KY 22, and the AA Highway. CSX provides rail line service to Falmouth and Butler.

II. Topography

The topography of Pendleton County is characterized by broad hilltops and steeply sloping hillsides. Elevations in the county range from a low of under 550 feet mean sea level in the Licking Valley to over 900 feet in the eastern and western parts of the county.

Figure 1.1


Pendleton County Population Growth: 1930-2020
Population
20000
15000
10000
5000
0
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Year

CHAPTER 2
PLANNING COUNCIL

I. Formation of the Planning Unit

The planning unit is defined by the boundaries of Pendleton County, as shown in Map 1. County water needs are served by the City of Falmouth, City of Butler, Pendleton County Water District, East Pendleton County Water District and Bullock Pen Water District.

II. Planning Council and Planning Representative

The following is a list of the Pendleton County Water Planning Council members and their affiliations:

Judge/Executive Henry Bertram, Planning Council Chair
Roscoe Antrobus, East Pendleton County Water District
Wayne Biddle, Pendleton County Health Department
Mayor Gene Flaugher, City of Falmouth
William Jones, Pendleton County Water District
Todd Ramsey, City of Falmouth
Mayor Delbert Reid, City of Butler
Jack Wright, Pendleton County Industrial Authority

Bullock Pen Water District elected not to serve on the water supply planning council because they serve a very limited number of customers in Pendleton County. Water supply planning council meeting summaries can be found in Appendix A.

Planning Representative

Northern Kentucky Area Development District(NKADD) was selected as the planning representative. The Development Services Division will be the primary responsible department. No other planning representatives were considered.

III. Notifications

401 KAR 4:220 subsection 5.3(a) requires extensive notifications regarding the water supply planning process including mayors, county judge-executives, and water suppliers in both the planning unit and adjacent counties. Local water watch groups and the public must also be notified. Sample of public notices, notification letters and a list of recipients can be found in Appendix B.

Map 1
Planning Unit

Pendleton County

N

BUTLER

FALMOUTH

Licking River

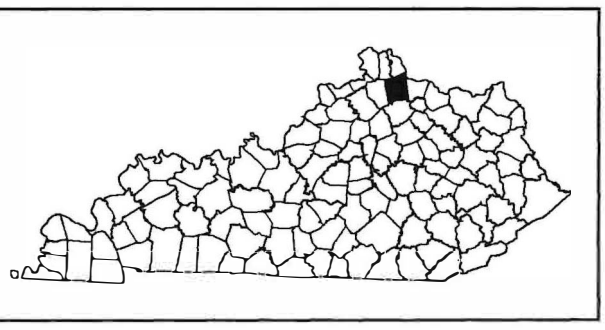
South Fork Licking River

Licking River

177 491 467 17 27 10 8 159 22 330

Miles
1 0.5 0 1 2 3 4

1 inch equals 2 miles



CHAPTER 3
PLANNING OBJECTIVES AND CONFLICTS

I. Planning Objectives

Description of Process

A public hearing was held Friday, September 12, 1997 to consider the planning objectives and to obtain the input of citizens. The meeting was advertised in the September 2, 1997 Falmouth Outlook. No citizens attended. The planning objectives were adopted at the meeting immediately following the public hearing.

Planning Objectives

Objectives for the planning process are outlined below:

1. Use of conservation to the maximum extent practical;

2. Plan to provide a continuous level of supply under all conditions; however, strongly encourage conservation during times of drought or emergency;

3. Compatibility with existing plans or offer recommendations to alter those plans;

4. Protection and enhancement of the overall quality of the environment;

5. Cost effectiveness; and

6. Social and political acceptability, and community cohesion.

A copy of the work plan can be found in Appendix C.

Water Supply Planning Conflicts

No conflicts have been identified.

II. Review of Existing Plans

The Licking River Basin Study, completed in 1990, is the only relatively recent comprehensive water supply plan that includes Pendleton County. The following is a detailed summary of that plan.

Licking River Basin Study Summary

The Licking River Basin Study was reconnaissance level investigation of water resource problems existing in the Licking River basin of Kentucky. This study was conducted subsequent to a resolution adopted by the Committee on Environment and Public Works of the U.S. Senate in January, 1987. This resolution advocated a review of the results of prior investigations in addition to further analysis. The Licking River Basin Task Force, consisting of 22 members, was drafted in 1988 to lead the project. The study was carried

out to predict and help facilitate the resolution of water resource problems in the Licking River Basin Area.

This investigation was performed in accordance with various regulations governing environmental and water resource policy. These regulatory documents dictated a two-phase project, the first of which, the reconnaissance phase, was federally funded. In this portion of the study, several plans were examined, resulting in the selection of a minimal number with which to work. The second segment, the feasibility phase, was equally funded by the federal government and local sponsors. This portion of the project, as opposed to the reconnaissance phase, was aimed at the identification of a single recommended plan.

Data were collected from several sources for this study to evaluate current and projected water demand, in order to assess the efficiency of current and projected water supplies. If demands on these water sources were found to exceed that of their supplies, the time, location, and degree of these deficits would have to be calculated to adequately prepare for such shortages.

The methodology for the Licking River Basin Study involved two components, the first of which was related to predictions of water demand and the second to water supplies. This methodology was applied to two specific flow scenarios, the 7Q10 low flow period, which is the minimum average discharge of seven days for ten year frequency event, and the 1930 drought of record. Due to the size and nature of the basin, it was divided into fifteen water service areas, defined by certain commonalties regarding water supply. Fourteen of these water service areas were evaluated during this study.

Licking River Basin Study – Projected Demands Analysis

For projected water demand, estimates were made using the IWR-MAIN computer model, which is maintained by the U.S. Army Corps of Engineers' Institute for Water Resources. This program makes predictions based on various socioeconomic characteristics of a given study area including: 1) population; 2) number, market value, and type of housing units; 3) employment in commercial and manufacturing industries; 4) water and wastewater rates; 5) residential lawn and garden watering; 6) weather conditions, and various other demographic qualities of the population.

Data for this portion of the study were collected from various sources such as the U.S. Bureaus of the Census and Economic Analysis, the Kentucky Directory of Manufacturers, County Business Patterns, the Urban Studies Center of the University of Louisville, and materials published by the OBERS Bureau of Economic Analysis. After this information was gathered, projections were made for water demands of the fourteen studied segments of the Licking River Basin.

Licking River Basin Study – Projected Supplies Analysis

In assessing current and future water supply conditions, flow rates were calculated at each point of withdrawal for various flow conditions. As with the water demand estimation, the two scenarios that were evaluated for supply projections were the ten-year drought using the 7Q10 flow rates and the 1930 drought. The primary points of interest for this portion of the study were those from which water is withdrawn for treatment and subsequent sale or distribution. These points were determined in the demand analysis survey. Data for these areas were collected primarily from reports of the U.S. Geological Survey, which has gaging stations across the state of Kentucky. Thus, stream flows were developed for the two conditions at each of the intake facilities.

Once flow rates had been determined for each of the intake facilities, the estimated supplies were compared to the projected demands for the corresponding withdrawal points to calculate the magnitude of potential surpluses and/or deficits.

Licking River Basin Study – Pendleton Water Service Area

The Pendleton Water Service area included the entire county and part of southern Campbell County. Only the northwestern corner of the county was excluded because it was considered part of the Bullock Pen Water Service District. The study projected that the total average daily demand for water in 2020 would be 1.8 mgd with a peak demand of 2.5 mgd. The water served population was projected at 10,641 with a total population of 14,802. The Licking River was considered to be an adequate source assuming that releases from Cave Run Lake continue at 1990 levels.

A Vision for Pendleton County, Falmouth and Butler, Kentucky

On March 1, 1997 Pendleton County, Falmouth, and Butler, Kentucky experienced a devastating flood. Approximately 78,590 acres were flooded. Seventy percent of Falmouth's land area and 30 percent of Butler's land area were flooded. One hundred housing units were completely destroyed. One hundred eighteen businesses were flooded and 37 closed permanently. Five lives were lost. As a result of this devastation, city and county leaders formed a vision team to oversee the rebuilding and redevelopment of the county. The vision plan is the guiding document for this process. Infrastructure needs and recommendations are a major part of the plan. The following recommendations are a part of the plan.

1. Complete the water supply plan.

2. Inadequate storage hindered the restoration of water service after the flood. Therefore, the vision plan recommends adding a 600,000-gallon ground storage tank in Falmouth. This would provide the system with a storage volume equal to average daily demand and would also provide for fire flow protection and an emergency allowance. *This project was completed in 1999.*

3. Water lines should be extended in areas that are not located in the floodplain to encourage growth in appropriate areas. Recommendations include 3.2 miles of 8"

line from the Dr. Scholl's tank to Bishop Ridge and also a 200,000-gallon elevated storage tank. 3.2 miles of 8" line should also be extended from the reservoir to KY 330. *On February 25, 2002, the council discussed this option and decided it was being served by other means. East Pendleton Water District accomplished this goal with the extension of water lines out U.S. 27 and down Bishop Ridge Road.*

4. A weir dam is recommended to form a permanent pool around the Falmouth intake. This would ensure adequate supply during low-flow periods.

5. Finally, an emergency reserve fund should be established to cover any unexpected and urgent infrastructure needs.

Map 2
Water Use

Pendleton County

N

BUTLER

FALMOUTH

Proposed Lake Williamstown Expansion

Licking River

South Fork Licking River

Licking River

8
10
10
17
22
22
22
27
27
159
177
177
330
330
467
467
491

County Seat
Fifth Class City
Surface Intake
Dam

Miles
1 0.5 0 1 2

1 inch equals 2 miles

CHAPTER 5
WATER USE AND WATER USE FORECAST

Pendleton County has two water suppliers and four major systems of distribution. The two water suppliers are Northern Kentucky Water District and the City of Falmouth. The four major systems of distribution include East Pendleton, Pendleton County, the City of Butler, and the City of Falmouth. Three minor distributors also serve Pendleton County, they include the City of Williamstown, Bullock Pen Water District, and Bracken County. Pendleton County has additional emergency supply points with the City of Williamstown and the City of Butler.

Water Supplier

BUTLER WATER WORKS

Address: P.O. Box 229
Butler, KY 41006

Phone: (859) 472-5015

Contact: Delbert Reid

Treated Water Source: Pendleton County Water District – 3.8 mg. monthly limit

Treated Water Storage:

Location	Type	Capacity
KY 177	Stand Pipe	210,000 gallons

Number of Customers: 325

Leak Detection Methods: No methods identified.

Planned Improvements: Currently purchasing water from Pendleton County Water District under contract.

Impact of 1997 Flood on Customer Base: Lost approximately 25 customers.

Water Distributor

PENDLETON COUNTY WATER DISTRICT

Address: P.O. Box 232
Falmouth, KY 41040

Phone: (859) 654-6964

Contact: William Jones

Treated Water Sources:

Northern KY Water District – 2 points of supply – 30.6 mg monthly limit
City of Falmouth – 5 mg monthly limit

Treated Water Storage:

Location	Type	Capacity	
U.S. 27 & 17	Elevated Tank	150,000 gallons	(Bethel)
Hogg Ridge Road	Standpipe	106,000 gallons	
Highway 177	Elevated Tank	200,000 gallons	

Number of Customers: 1640

Leak Detection Methods: Monitoring master meter readings, valve down lines, walk lines, and placement of leak detection meters/sonic listening equipment.

Planned Improvements: Extending lines in the north and northwest portion (Hwy. 491, Hwy. 467 & Locust Grove) of county with the potential of tying into three districts - Bullock Pen, East Pendleton and City of Williamstown. Also looking into upsizing line at Grants Lick to Pendleton County line from 6" to 12".

Anticipated Growth: The Northern portion of the county is continually growing. Also, the flood in Falmouth has caused some relocation to this service area.

Impact of Flood of 1997 on Customer Base: Has increased the number of customers as people relocate to new development in northern Pendleton County.

Water Distributor

EAST PENDLETON COUNTY WATER DISTRICT

Address: 601 Woodson Road
P.O. Box 29
Falmouth, KY 41040

Phone: (859) 654-2100

Contact: Roscoe Antrobus

Treated Water Source: City of Falmouth

Treated Water Storage:

Location	Type	Capacity
Highway 22	Elevated Tank	100,000 gallons
Hightower	Elevated Tank	100,000 gallons
Mt. Auburn	Elevated Tank	150,000 gallons
Peach Grove	Standpipe	100,000 gallons

Number of Customers: 1248

Leak Detection Methods: Daily master meter readings and walking main lines. Using by pass meters, monthly water audit

Planned Improvements: Add 25 miles of water line and increase customers by 283. 502 project will add 55 new customers. Tie in 6" water main with Bracken County for emergency water supply.

Anticipated Growth: Growth is anticipated.

Water Supplier

CITY OF FALMOUTH

Address: 230 Main Street
Falmouth, KY 41040

Phone: (859) 654-6008

Contact: Wm. Todd Ramsey

Raw Water Source: Licking River

Permitted Withdrawal Limit: 1 mgd

Treatment Plant:

Location: 508 East Shelby Street
Capacity: 2.1 mgd
Date Built: 1923, repaired 1958, upgraded in 1968, 1986, and 1992
Type of Treatment: Conventional Surface Water

Treated Water Storage:

Location	Type	Capacity
Plant	Standpipe	110,000 gallons
Plant	Standpipe	200,000 gallons
Reservoir Hill	Tank at Grade	455,000 gallons
Reservoir Hill	Storage Tank	600,000 gallons
South System	Elevated Tank	250,000 gallons

Leak Detection Methods: Look for water surfacing.

Planned Improvements: Low level weir dam

Anticipated Growth: Yes, growth anticipated.

Impact to Line Extensions: Impact due to line extensions, customer base has increased.

Water Supplier

BULLOCK PEN WATER DISTRICT

Address: P.O. Box 188
Crittenden, KY 41030

Phone: (859) 428-2112

Contact: William Catlett

Raw Water Source: Bullock Pen Lake

Permitted Withdrawal Limits:

January through April – 750,000 gpd
May through August – 850,000 gpd
September through December – 750,000 gpd

Treatment Plant:

Location: 2430 Violet Road, Crittenden
Date Built: 1962 with subsequent upgrades
Capacity: 1 mgd
Type of Treatment: Surface Water Full Treatment

Treated Water Sources:

Source Utility	Maximum Delivery
City of Walton	100,000 gpd
City of Williamstown	None stated, but there is a 150,000 gpd minimum

Treated Water Storage:

Location	Type	Capacity
Dry Ridge	Standpipe	140,000 gallons
Verona	Elevated Tank	100,000 gallons
Crittenden	Elevated Tank	200,000 gallons
Sherman	Elevated Tank	150,000 gallons
Stewartsville	Elevated Tank	200,000 gallons
Plant	Standpipe	135,000 gallons

Number of Customers:

Pendleton County – 112
Grant County -- 3,542
Boone County – 583
Kenton County – 102
Gallatin County – 21

Leak Detection Methods: Driving lines, checking valves, and charts on telemetry systems.

Planned Improvements: Upgrading the size of lines, doing away with AC lines, possible emergency tie in with Pendleton County Water District.

Anticipated Growth: There is a lot of development and potential for development in this service area. Many subdivisions are being planned or built.

Permitted Withdrawals

A water withdrawal permit is required for any user who withdraws an average of more than 10,000 gallons of water per day. According to DOW records, the only permitted withdrawals, using this definition, is the City of Falmouth.

Agricultural Water Use

Agricultural users who withdraw water are exempt from the permit requirement. Therefore, it is very difficult to quantify their water use. According to the 1992 Census of Agriculture, only 28 acres of farmland are irrigated or approximately 0.1 percent of total farmland. Looking at trends in agriculture, the total number of farms decreased by 28 between 1987 and 1992. Total acreage in farms also decreased by 6 percent during that period. As residential development continues, it is likely that total farmland will decrease even further. Some agricultural water users are on public water systems.

B. Water Use Forecast

The water supply forecasting model, IWR-MAIN, discussed previously in the review of existing plans, was used to forecast future demand for water for the two water service areas, Butler and Falmouth. It must be emphasized that the IWR-MAIN model was designed for use in large urban areas. Therefore, results must be viewed with caution and compared against local knowledge. Projections are intended to serve as a planning tool, not as an absolute measure of future demand.

City of Butler

The City of Butler serves the incorporated area and a few customers outside the city limits on KY 177. The treated water source is the Pendleton County Water District.

Assumptions Used in the Modeling Process

One assumptions was used in the modeling process.

1. It was assumed that growth would be fairly flat since there is not much room for development within the city limits.

Data Sources

The following data sources were used for the IWR-MAIN model.

1. 2000 Census of Population and Housing and Census Bureau population estimates.

2. Manufacturing data was complied from the Kentucky Directory of Manufacturers.

3. A survey completed by the City was used for calibration and to verify accuracy. A sample copy of the survey can be found in Appendix D.

Methodology and Verification of Estimates

2000 was the base year. The projections were then compared against actual water use for 2000. Water use projections were forecasted until 2020 at five-year intervals.

While total projected water use is considered to be acceptable, sectoral use is more questionable. The City provided limited sectoral data, particularly for historic years. IWR-MAIN is estimate public/unaccounted water at 20 percent, which may be somewhat high. Figures 5.1 through 5.5 show projected water use by sector. Table 5.1 shows the forecasted water use values for Bulter.

Conclusions

Total average demand for water will peak at approximately 87,000 gpd in 2020. Growth is relatively flat because there is limited room for development in the city. The percentage of water use by sector remains relatively stable throughout the planning period.

Figure 5.1 - 2000 City of Butler Water Use

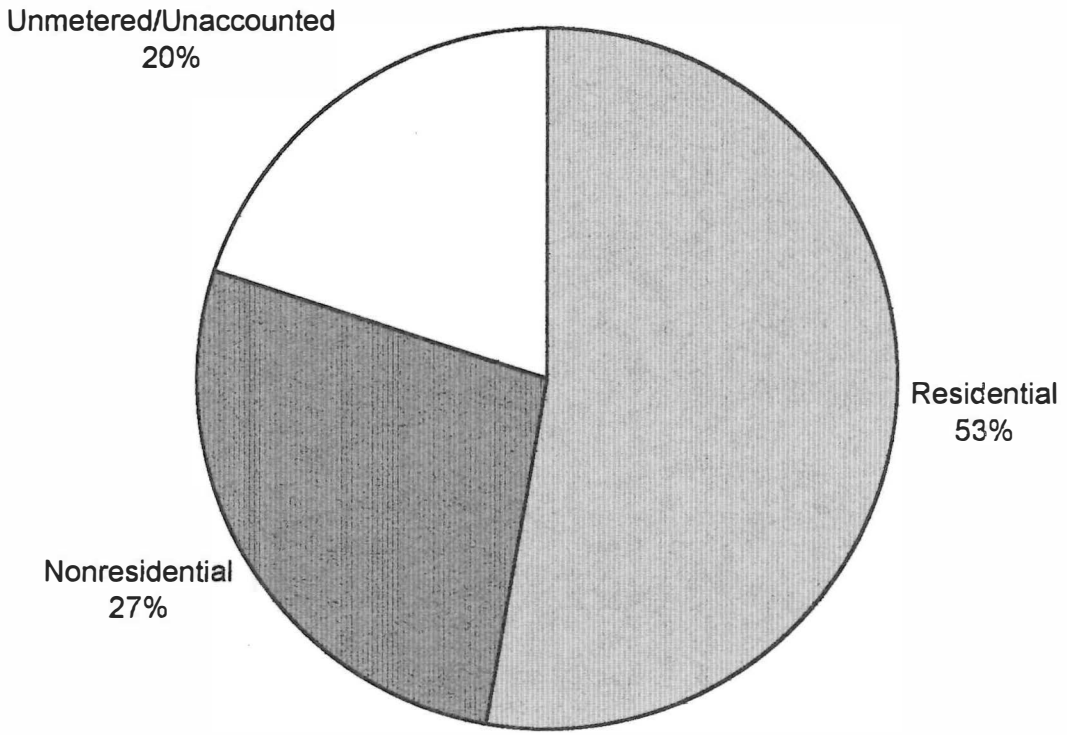


Figure 5.2 - 2005 City of Butler Projected Water Use

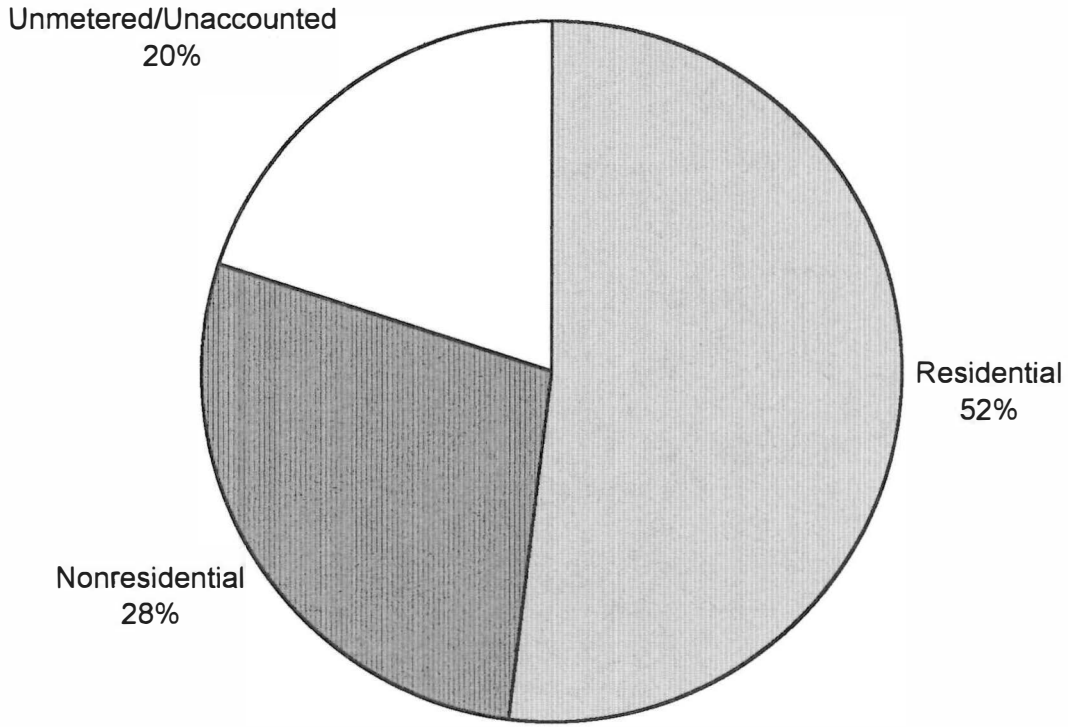


Figure 5.3 - 2010 City of Butler Projected Water Use

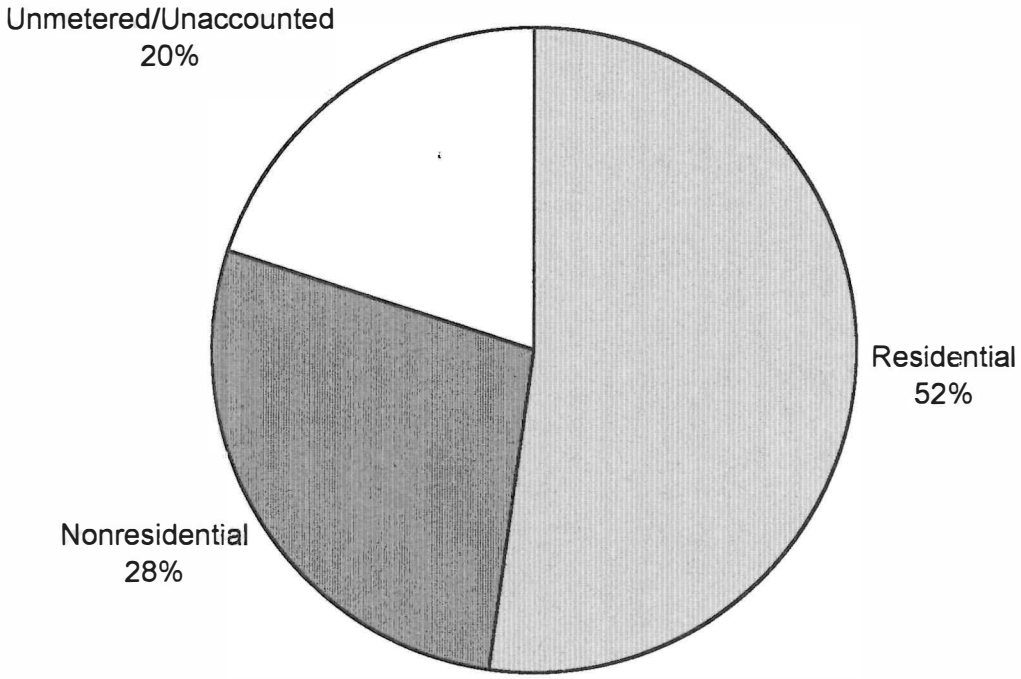


Figure 5.4 - 2015 City of Butler Projected Water Use

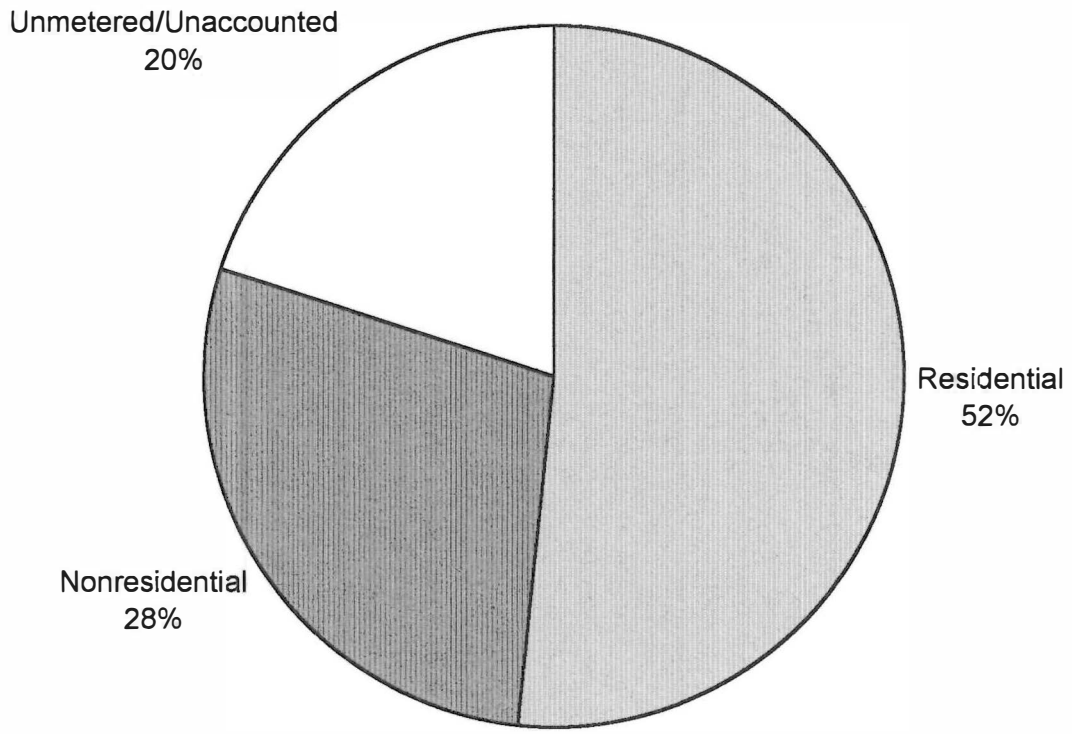


Figure 5.5 - 2020 City of Butler Projected Water Use

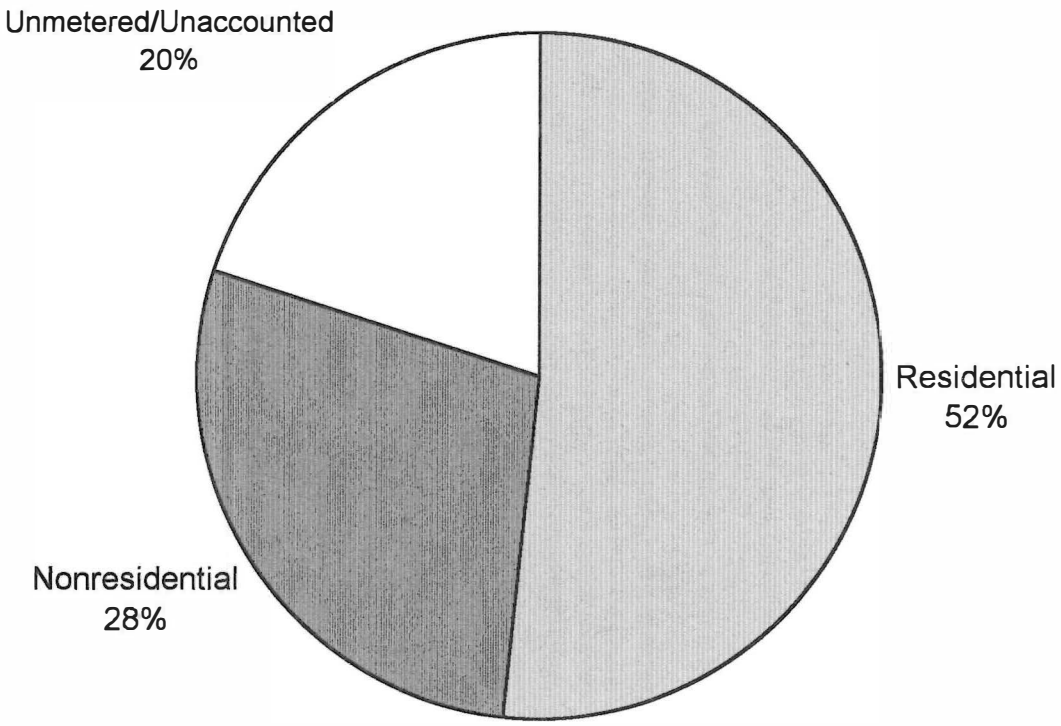


Table 5.1

Forecasted Water Use Values

Water Use In Gallons/Day

Study Area Butler

	2000	2005	2010	2015	2020
Residential					
All Residential	36,164	37,690	40,742	42,726	45,320
Nonresidential					
All Nonresidential	18,740	20,260	21,781	23,301	24,822
Other					
Unmetered/Unaccounted	13,726	14,488	15,631	16,507	17,535
Avg-Daily Demand	68,630	72,438	78,154	82,534	87,677
System Peak Demand	0	0	0	0	0

City of Falmouth

The City of Falmouth serves the incorporated area and also sells water to the East Pendleton County Water District and the Pendleton County Water District. The raw water source is the Licking River.

Assumptions Used in the Modeling Process

A number of assumptions were used in the modeling process.

1. The commercial/institutional sector, which includes water sales to other utilities, will be the largest demand sector because most of the growth in the county will occur outside city limits, particularly in the northern portion of the county.

2. Industrial water use is projected to remain relatively stable; however, if an industry with large water requirements locates in the city during the planning period, projections will need to be re-worked.

Data Sources

The following data sources were used for the IWR-MAIN model.

1. 2000 Census of Population and Housing and Census Bureau population estimates.

2. Manufacturing data was compiled from the Kentucky Directory of Manufacturers.

3. The high growth series of population projections for the University of Louisville's How Many Kentuckians was used.

Methodology and Verification of Estimates

2000 was the base year. Projections were similar to actual use. Therefore, this was considered acceptable and no further calibrations were made.

A major data constraint for the verification of sectoral water demand was the city's separation utility operations and billing. The flood of 1997 also destroyed some records. Consequently, the City did not provide any sectoral data. Therefore, the accuracy of sectoral demand is questionable and reflects at best, a "guesstimate".

Figures5.6 through 5.10 show projected use by sector. Again, no actual sectoral data was provided for 2000. Table 5.2 shows the forecasted water use values in Falmouth. Public/unaccounted water is estimated by IWR-MAIN at 15 percent throughout the planning period. In part, due to a lack of master meters and in part, due to the separation of billing and utility operations, estimates of water losses are not available.

Conclusions

Total water use will increase to approximately 1.4 mgd by 2020, an increase of 100 percent from 1995. Based on county population projections showing an increase of 58 percent by 2020 and assuming additional commercial and institutional growth occurring to serve the population base, projections seem reasonable.

Figure 5.6 - 2000 City of Falmouth Water Use

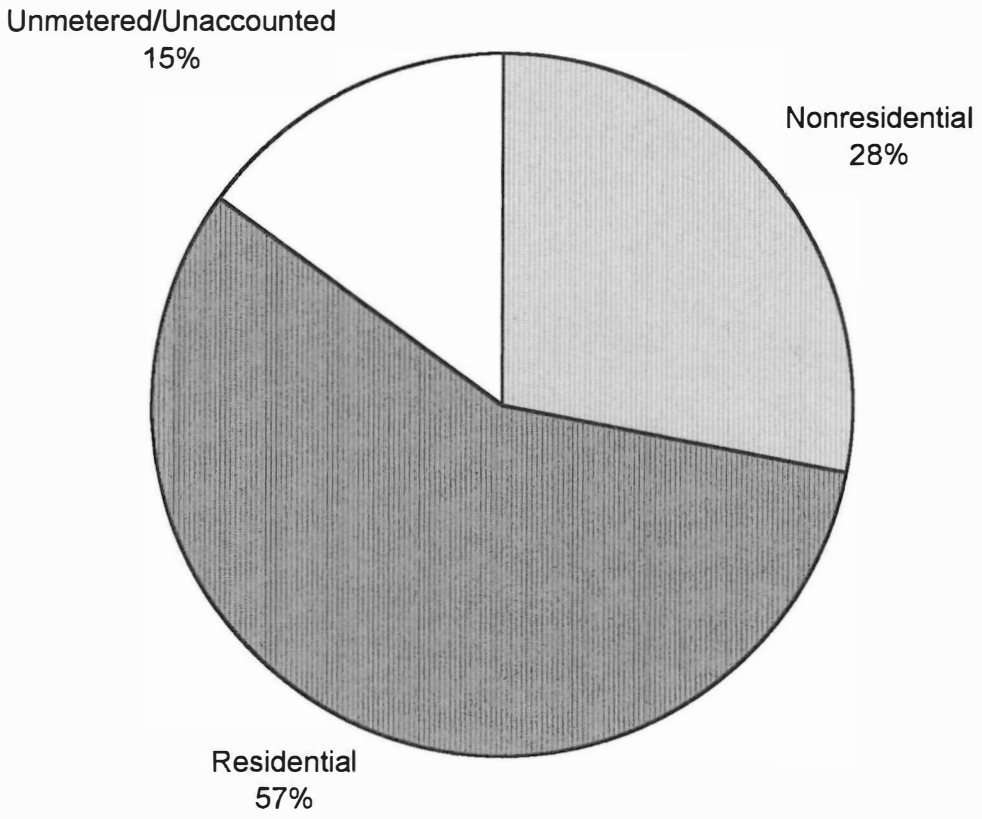


Figure 5.7 - 2005 City of Falmouth Projected Water Use

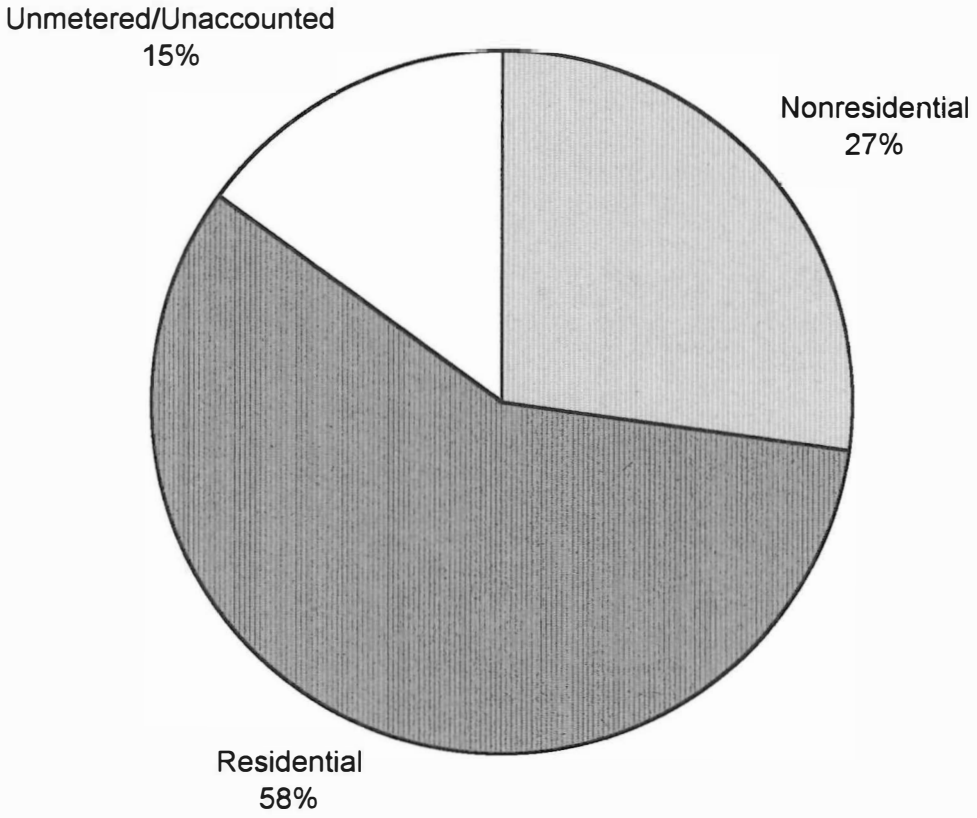


Figure 5.8 - 2010 City of Falmouth Projected Water Use

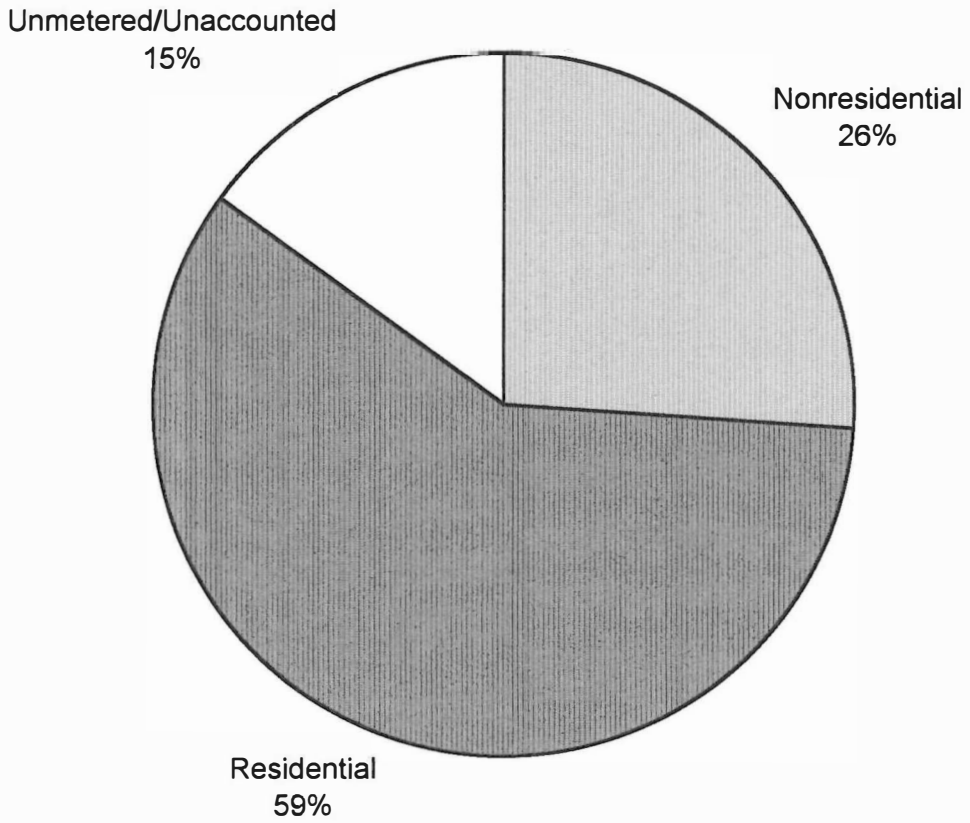


Figure 5.9 - 2015 City of Falmouth Projected Water Use

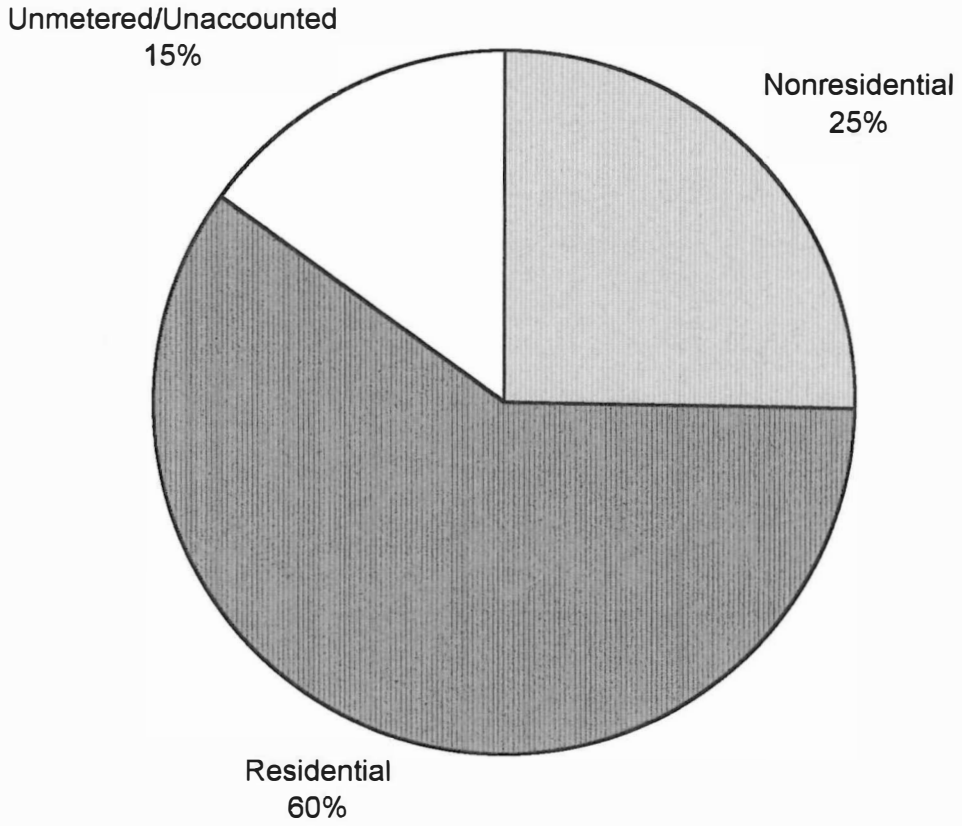


Figure 5.10 - 2020 City of Falmouth Projected Water Use

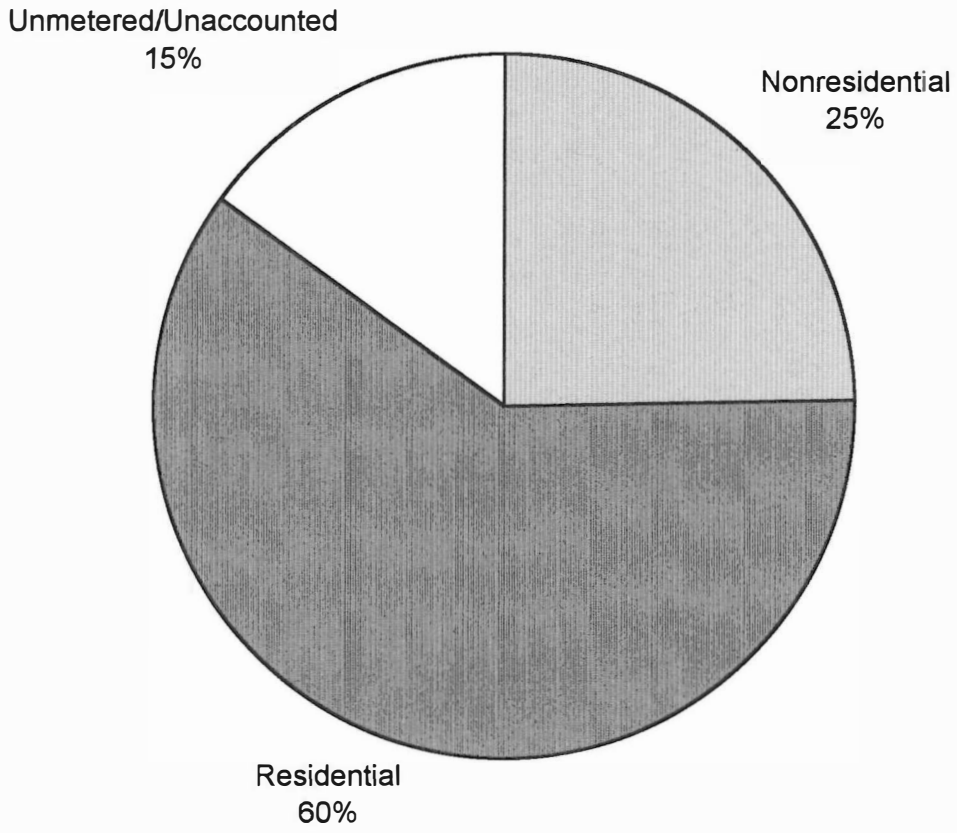


Table 5.2

Forecasted Water Use Values

Water Use In Gallons/Day

Study Area falmouth

	2000	2005	2010	2015	2020
Residential					
All Residential	571,260	648,458	725,655	802,852	880,050
Nonresidential					
All Nonresidential	281,370	305,293	319,340	338,673	358,145
Other					
Unmetered/Unaccounted	150,464	168,309	184,411	201,446	218,505
Avg-Daily Demand	1,003,094	1,122,059	1,229,406	1,342,971	1,456,700
System Peak Demand	0	0	0	0	0

Bullock Pen Water District

Bullock Pen Water District (BPWD) serves approximately 102 customers in southern Kenton County. In addition, BPWD also serves northern Grant County and parts of Boone, Gallatin, and Pendleton Counties. Bullock Pen currently meets water demand with both treated and purchased water. The source of treated water is Bullock Pen Lake. Permitted withdrawal limits from the lake vary by month. BPWD also purchases water from the City of Walton with a 100,000 gallon per day maximum and from the City of Williamstown with a 150,000 gallon per day minimum with no stated limit.

Assumptions Used in the Modeling Process

A number of assumptions were used in the modeling process.

1. The City of Crittenden is demographically representative of this area in terms of income and housing values.

2. Currently, there is limited industrial water use in this area and it is assumed that this will continue to be true.

3. The majority of all future residential, commercial, and institutional water use will occur in water-served areas.

4. Public/unaccounted water was calibrated at five percent rather than the ten percent automatically set by the IWR-MAIN model. According to the survey completed by BPWD, five percent is a more accurate figure.

5. Residential water use is not shown broken down into single-family, multi-family, flat-rate, metered , sewered, and unsewered categories in the following figures. BPWD does not keep data at this level of detail and best "guesstimates" and census data were used for the model where required by entry screens.

Data Sources

1. 2000 Census of Population and Housing

2. Population projections are from the high growth series of How Many Kentuckians: 1995 Edition.

3. Unemployment insurance data was used to estimate employment by sector in Grant County.

4. Manufacturing data was compiled from the Kentucky Directory of Manufacturers. Surveys completed by water suppliers and distributors were used for calibration and to verify accuracy.

Methodology and Verification of Estimates

2000 was the base year. Figures 5.11 through 5.15 show actual and projected water use by sector. Table 5.3 shows the forecasted water use values for Bullock Pen Water District.

Conclusions

Figure 5.16 compares the projected demand for water to available supply. As mentioned previously, the maximum permitted withdrawal from Bullock Pen Lake is 800,000 gpd; however, in some months, it is as low as 550,000 gpd. Therefore, BPWD relies on a combination of purchased and treated water to meet demand. The City of Walton provides a maximum of 150,000 gallons per day. The City of Williamstown does not currently have a maximum limit, only a minimum of 150,000 gpd. However, for planning purposes, it was assumed that the City of Williamstown could not provide for more than 500,000 gpd. Therefore, a total of 1,450,000 gpd would be available. Using this figure, supply would not meet demand during the planning period; however, this is very dependent on the City of Williamstown providing a significant percentage of the supply for this water service area.

Figure 5.11 - 2000 Bullock Pen Water Use

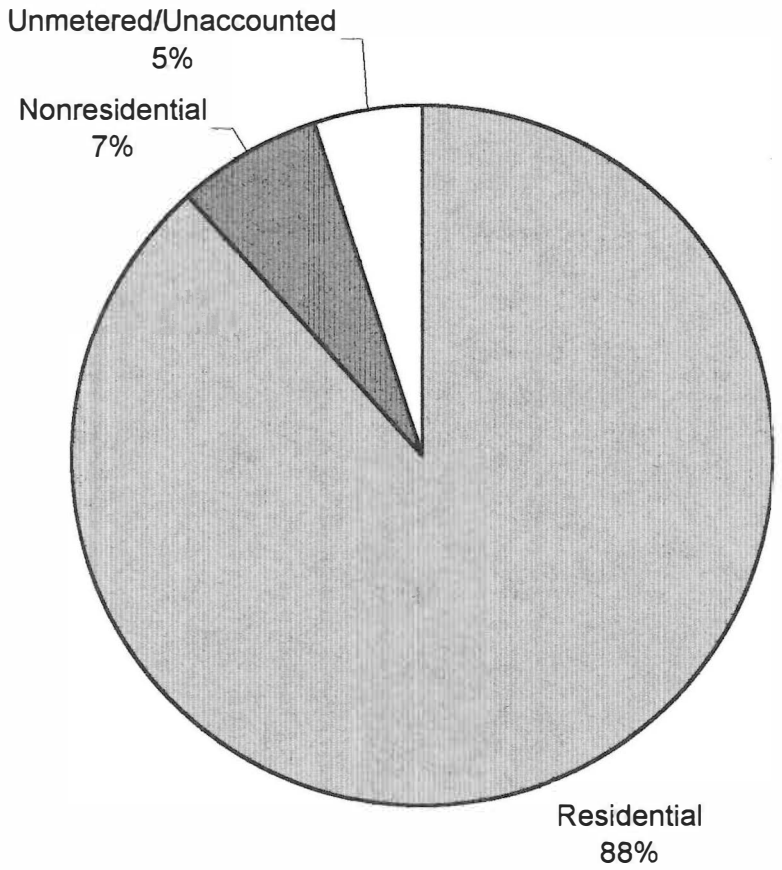


Figure 5.12 - 2005 Bullock Pen Projected Water Use

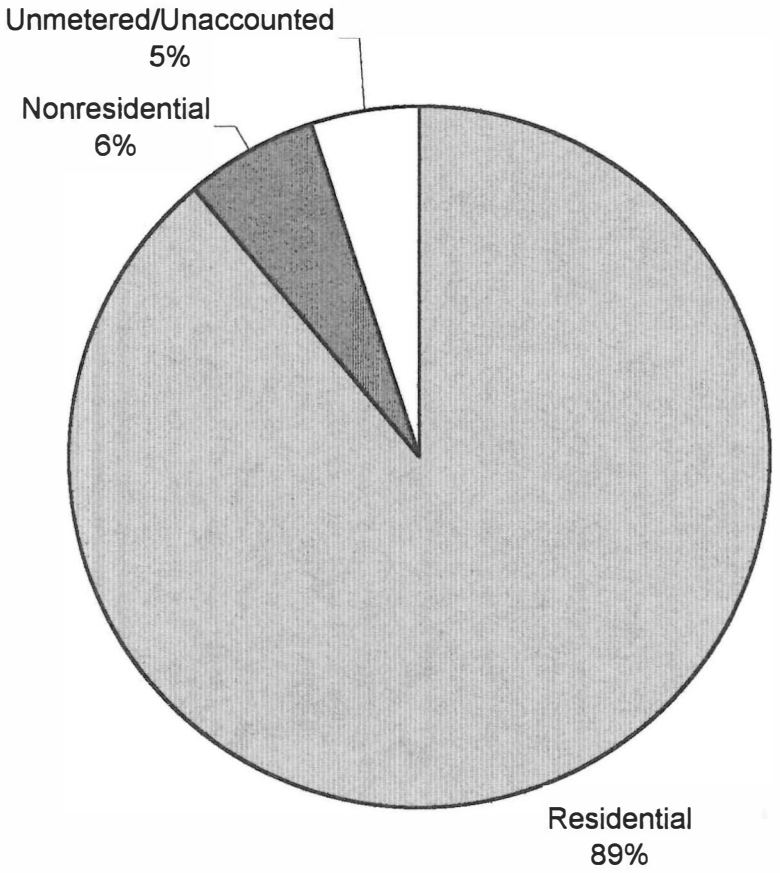


Figure 5.13 - 2010 Bullock Pen Projected Water Use

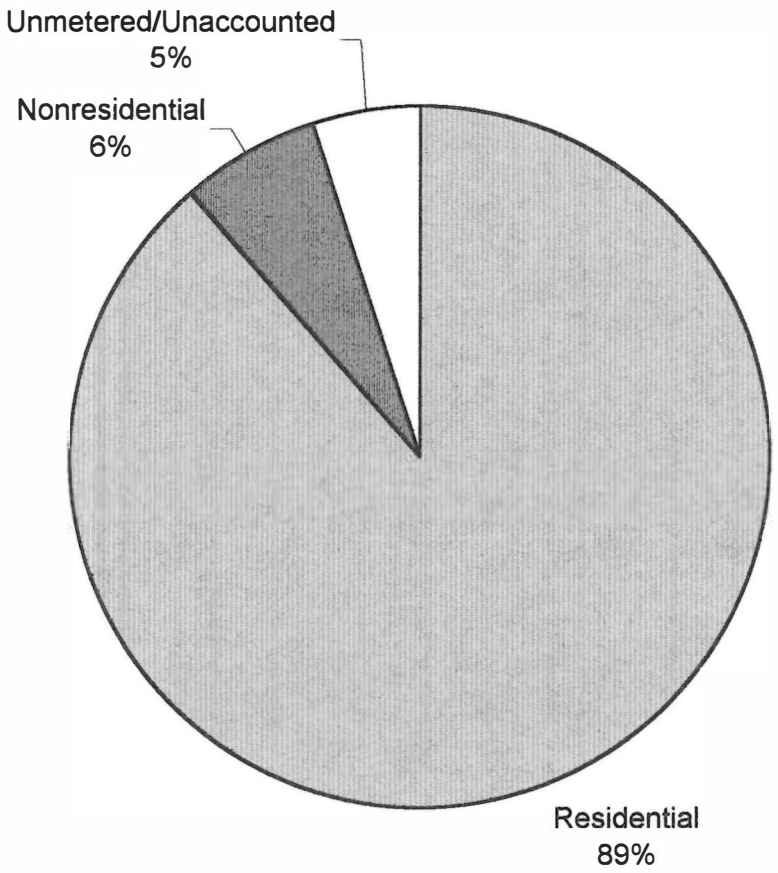


Figure 5.14 - 2015 Bullock Pen Projected Water Use

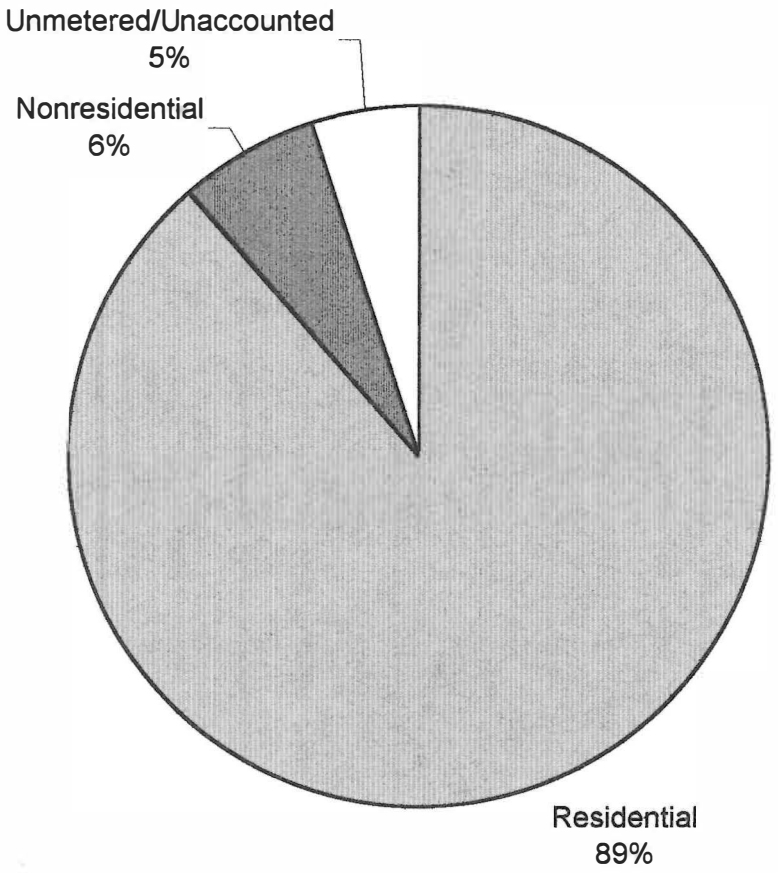


Figure 5.15 - 2020 Bullock Pen Projected Water Use

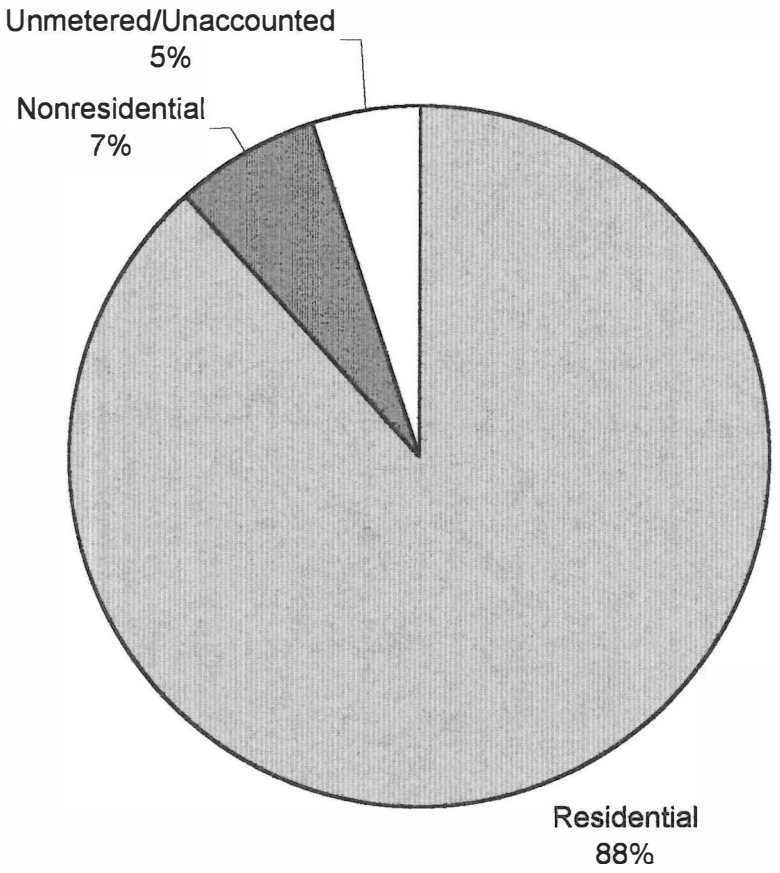


Table 5.3

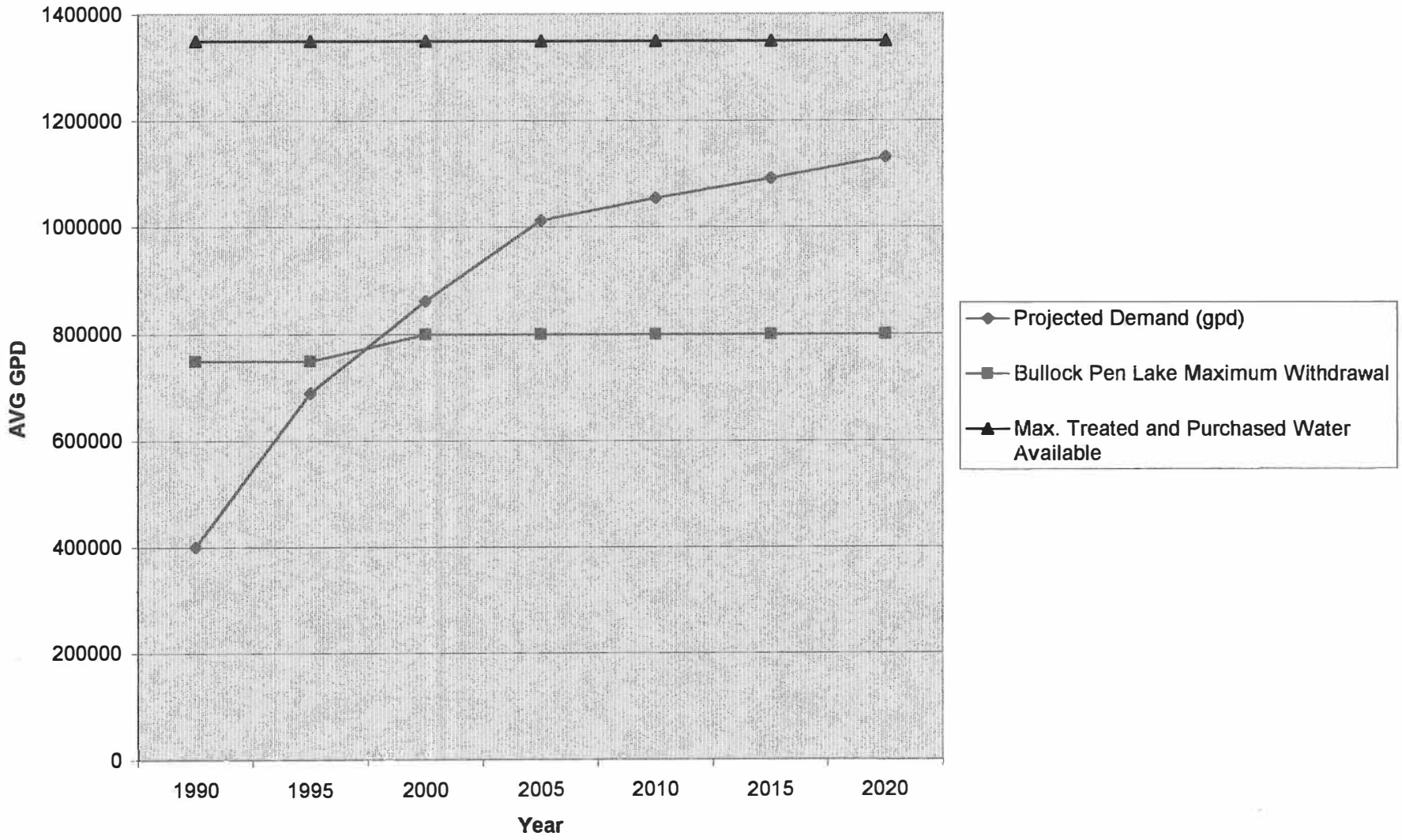
Forecasted Water Use Values

Water Use In Gallons/Day

Study Area Bullock Pen

	2000	2005	2010	2015	2020
Residential					
All Residential	762,740	899,572	933,737	966,877	1,001,043
Nonresidential					
All Nonresidential	57,205	62,236	68,272	69,882	73,906
Other					
Unmetered/Unaccounted	43,155	50,621	52,737	54,566	56,576
Avg-Daily Demand	863,100	1,012,429	1,054,747	1,091,326	1,131,525
System Peak Demand	0	0	0	0	0

Figure 5.16 - Bullock Pen Water Service Area: Water Source(s) Vs. Projected Demand



C. Infrastructure Assessment

This section provides a general assessment of the infrastructure and treatment capacity, if applicable, of the major water suppliers and distributors in Pendleton County. Map 3 shows the areas currently served by the major suppliers and distributors. Map 4 shows planned expansions.

City of Falmouth

The City of Falmouth upgraded its treatment plant in 1992 to a capacity of 2.1 mgd. The plant uses conventional surface water treatment processes. In addition to serving the city, water is also sold to Pendleton and East Pendleton County Water Districts. Figure 5.28 compares treatment capacity to projected demand. Treatment capacity is adequate through the planning period.

Falmouth currently has 1.62 mg of storage in locations noted previously. As a result of the flood, it became evident that storage capacity needed to be increased. Water reserves in storage, even with conservation measures, only lasted 8 to 10 hours after the treatment plant was flooded. Therefore, a 600,000 gallon ground storage tank was constructed and increased the water reserve storage capacity to the current 1.62 mg, which would last approximately 24 hours.

The system has approximately 20 miles of water lines, many of which are antiquated. Some are small diameter. The Water Department is unable to estimate water losses, in part because the billing function is separated from the utility operations. Therefore, utility personnel are not alerted to changes in water use that might indicate leaks. While the system is metered, there is no formal meter replacement system. The old meters are less accurate that new ones which also adds to the difficulty in estimating water losses. A hydraulic study is planned for the system, which should improve the distribution system.

Falmouth is applying for funds from the Drinking Water Supply Revolving Fund to install 3 miles of 8" water main from the existing reservoir to the US 27/KY 330 area. This main will replace an inadequately sized and aging 6" main that the Pendleton County Water District pumps from in the northern part of the County.

The Vision Plan, referenced earlier, also recommends the construction of a permanent weir dam. This dam would ensure a permanent pool around the Falmouth intake, even during low-flow months.

City of Butler

The City of Butler's treatment plant, constructed in 1948, has a capacity of 200,000 gpd; however, the plant is in need of significant and very costly renovations. As a result, Butler now purchases its water from the Pendleton County Water District.
The City has one 210,000 gallon storage tank that was constructed in 1986. This is adequate for both current and projected demand.

Map 3
Existing Service Areas

Pendleton County

N

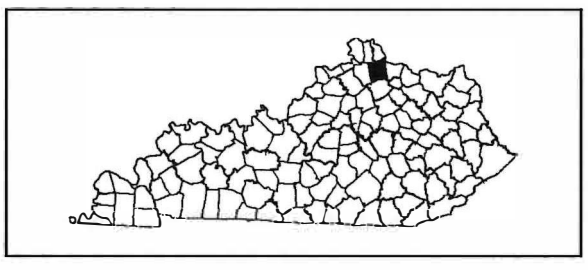
BUTLER

FALMOUTH

Miles
1 0.5 0 1 2

1 inch equals 2 miles

Revised 2/2002



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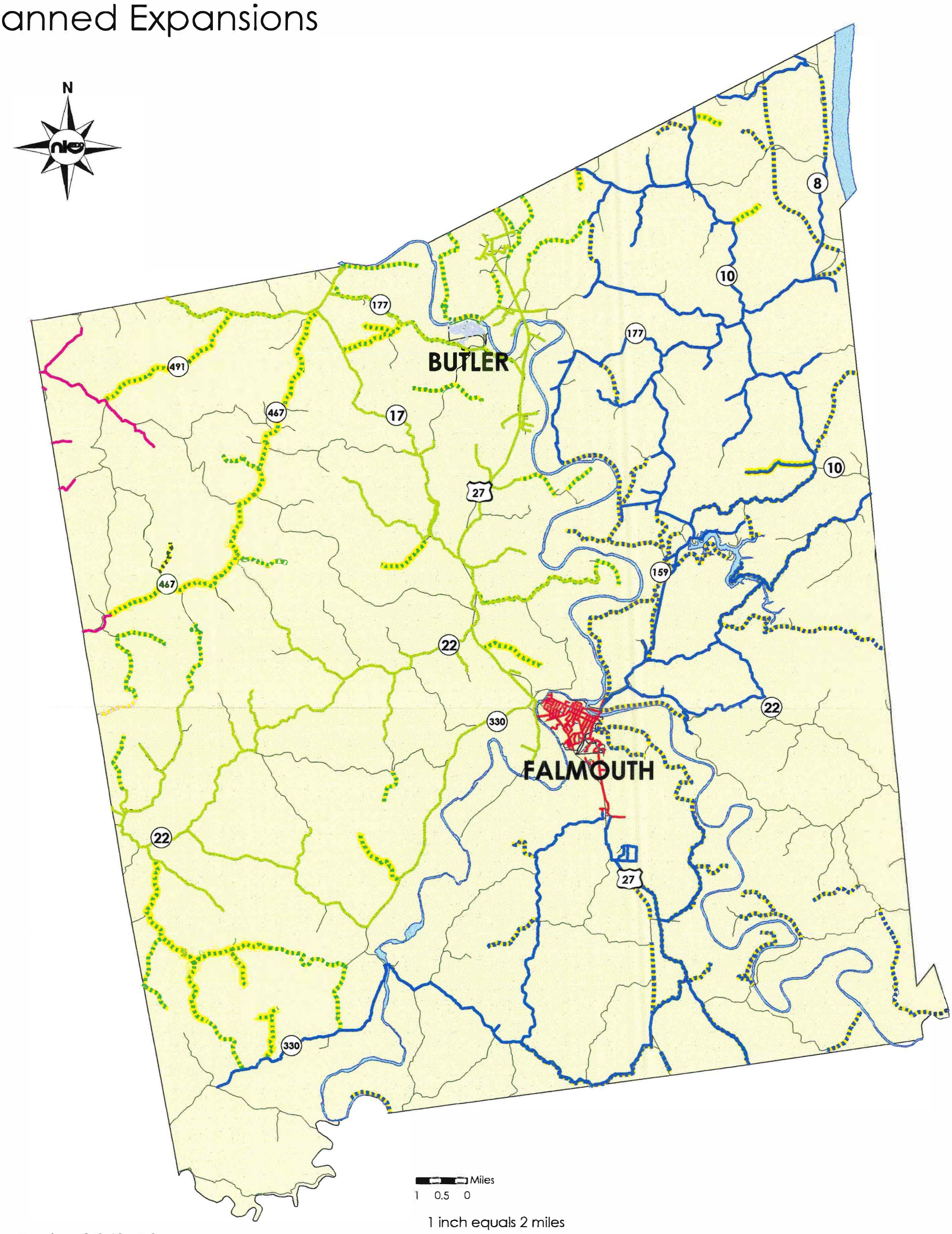
Water System Service Areas

- Bullock Pen Water District
- Butler Waterworks
- East Pendleton Water District
- Falmouth Water District
- Pendleton County Water District
- Williamstown Municipal Water

- County Seat
- Fifth Class City
- Streams
- US Highway
- State Highway
- County, City Street

Map 4
Planned Expansions

Pendleton County



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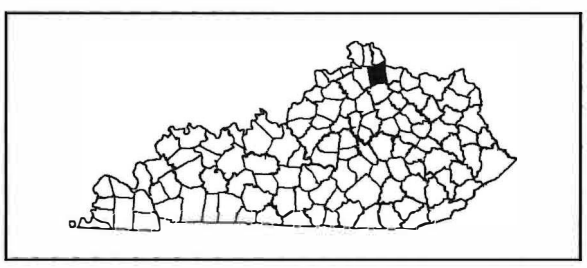


PROPOSED EXTENSIONS
- East Pendleton Water District
- Pendleton County Water District
- Williamstown Municipal Water District

EXISTING WATERLINES
- East Pendleton Water District
- Pendleton County Water District
- Butler Water Works
- Falmouth Water Department
- Northern Kentucky Water District
- Bullock Pen Water District

Figure 5.17

City of Falmouth: Treatment Capacity Vs. Projected Demand

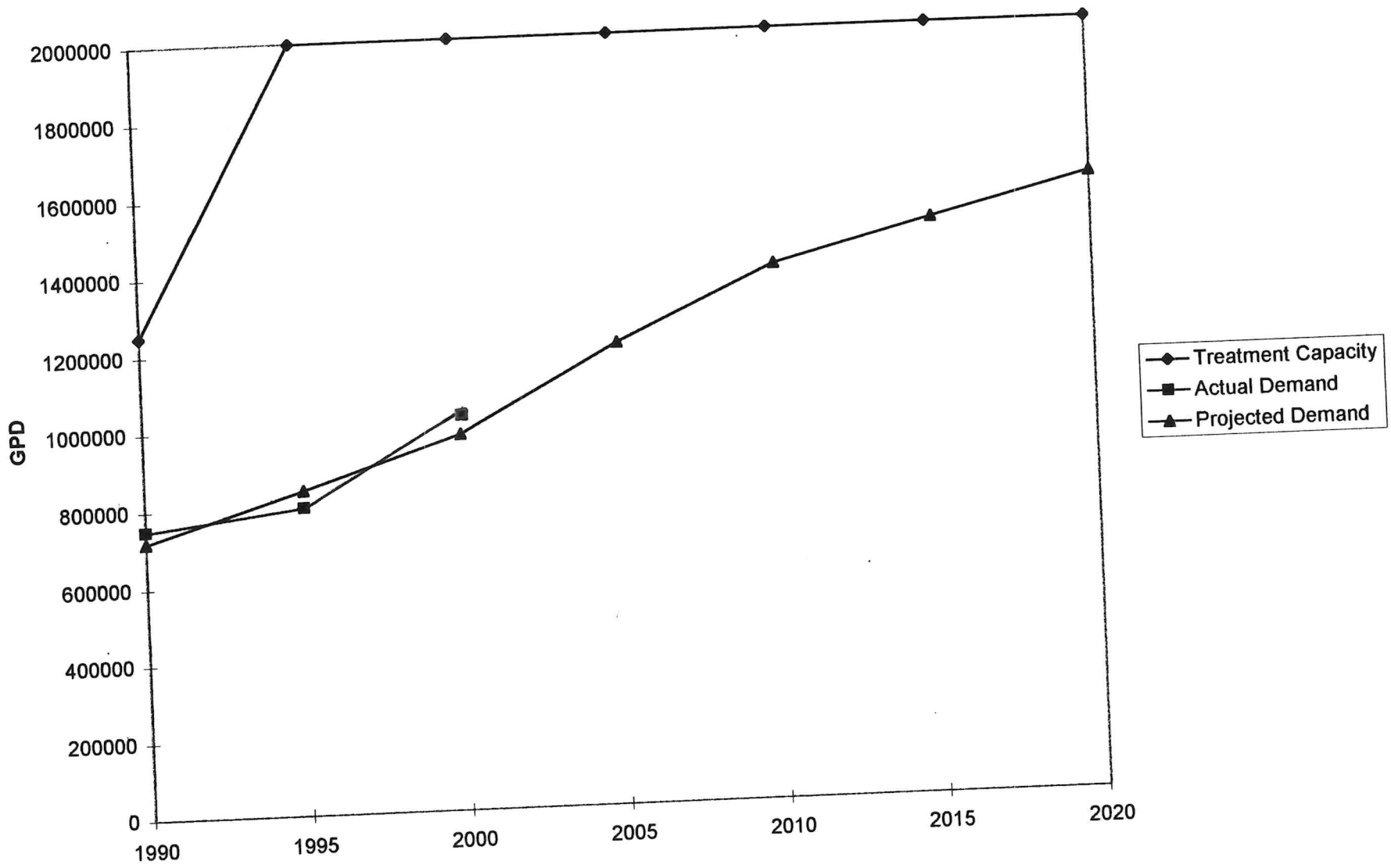
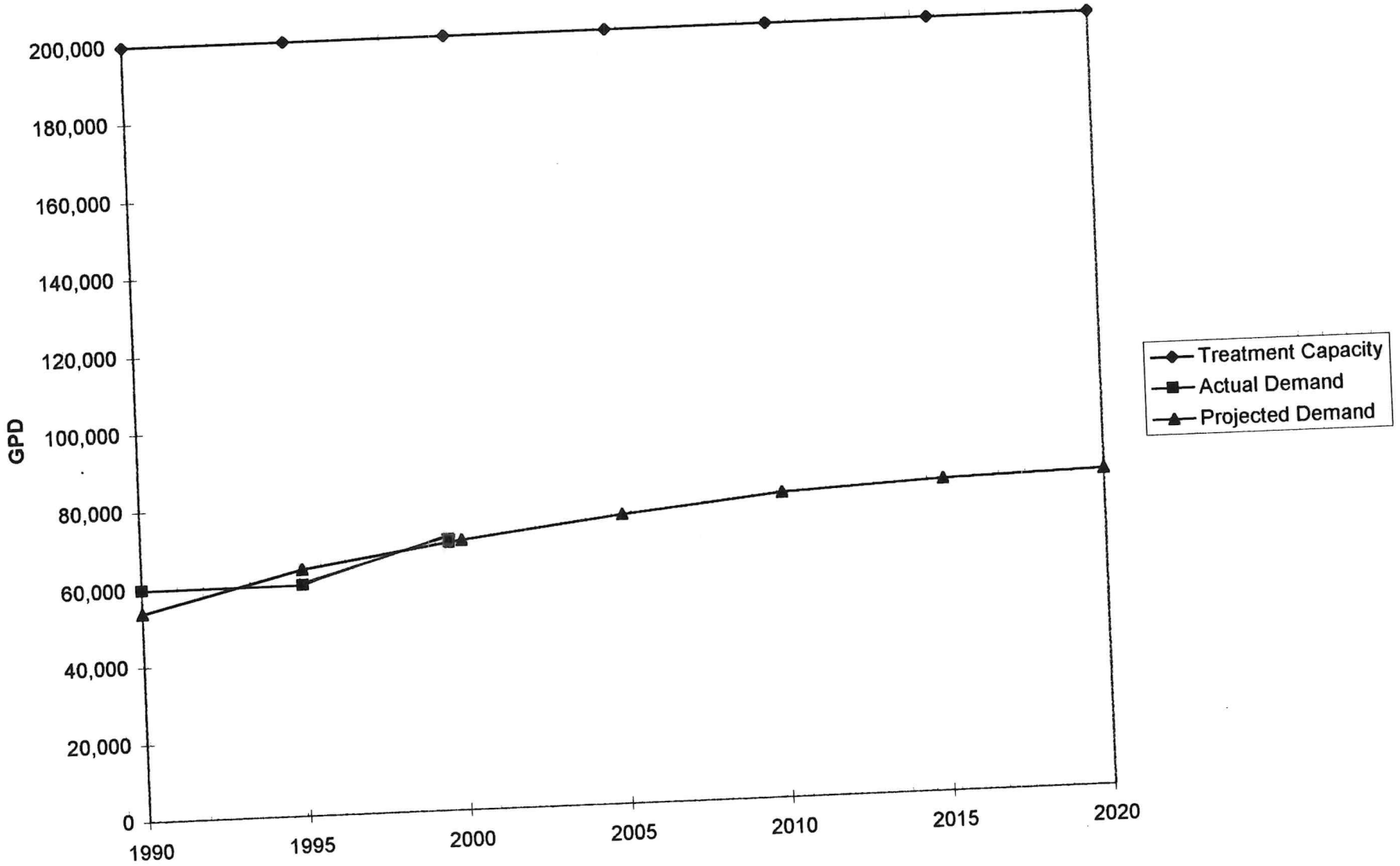


Figure 5.18

City of Butler: Treatment Capacity Vs. Demand



There are approximately 6 to 8 miles of water lines, many of which actually pre-date the treatment plant. The original distribution system was installed in the 1920s and 1930s when wells were used as the source of supply. There is a 6" main across the Licking River at KY 177 that connects with the Pendleton County Water District. The City did not provide an estimate of water losses.

Pendleton County Water District

The Pendleton County Water District (PCWD), established in the early 1960s, serves approximately 1,650 customers in western and northern Pendleton County and southern Campbell County. PCWD purchases water from the Northern Kentucky Water Service District through a 6" connection on US 27 and a 12" connection on KY 17. This accounts for approximately 65 percent of the utility's water supply. The other 35 percent is purchased from the City of Falmouth. In 2001, the district completed an emergency tie-in at the Pendleton/Grant County line with the City of Williamstown.

PCWD currently has 456,000 gallons of storage in locations noted previously. The US 27 and KY 17 tank was repaired and painted in September 1997. The Hogg Ridge Tank was restored in 2001. The storage system is in good condition.

PCWD has approximately 102 miles of water lines, which are in good condition. Water losses averaged 6.7% percent in 2001. Leak detection methods include monitoring master meter readings, valving down lines, use of sonic listening equipment, leak detection meters and walking lines.

The Pendleton County Water District and the City of Butler completed a project in 2001 that would give them another connection with Northern Kentucky Water District. The project included a master meter at the Pendleton/Kenton County line, a 12" main along KY 17, KY 467, and KY 177 to the Butler storage tank and then along Hogg Back Road to the Pendleton County Water District 8" ductile iron main on US 27. The project also included a 200,000 gallon storage tank, radio telemetry upgrades, the installation of a master meter vault and controls at the Butler tank and a new storage building at the tank site.

This project ensures an adequate and dependable water supply for the Pendleton County Water District and Butler. It would decreases demands on the Falmouth water treatment plant, extending its useful life. The Butler treatment plant was eliminated and Butler purchases their water from the PCWD.

East Pendleton County Water District

The East Pendleton County Water District, serving approximately 1,248 customers in Pendleton and southern Campbell Counties, purchases water from the City of Falmouth. The utility has 450,000 gallons of storage in locations noted previously. The storage system is relatively new with two tanks constructed in 1989 and two in 1994.

East Pendleton has approximately 88 miles of water lines. Lines are in good condition. 1996 water loses were estimated at 11 percent. Leak detection methods include daily master meter readings and walking main lines. Planned improvements include adding 25 miles of water lines to serve at additional 283 customers.

Bullock Pen Water District

The Bullock Pen Water District (BPWD) currently has a treatment capacity of 1 mgd and a permit withdrawal maximum ranging from 750,000 to 850,000 gpd. The withdrawal limits change through the year based on the seasons. BPWD recently applied to the Division of Fish and Wildlife for an increase in the withdrawal maximum to 1 mgd; however, only a 50,000 gpd increase was approved for the new maximum of 850,000 gpd. The treatment plant, constructed in 1962 and subsequently upgraded, is in good condition. Refer to Figure 5.27 for a comparison of projected demand and treatment capacity.

BPWD has a storage capacity of 925,000 gallons in locations noted previously. With an average demand of 675,000 gpd in 1995, storage capacity appears to be adequate at this time. However, there is considerable residential growth in this service area and demand is expected to increase. Therefore, Bullock Pen plans to construct a new storage tank west of Dry Ridge. The exact location has not been determined. The storage system is in generally good condition with the exception of a standpipe in Dry Ridge that needs to be replaced.

Water losses are estimated at five percent. The system is metered. There is no single use that purchases 20 percent or more of the water produced. No accessibility problems related to intake elevation or pump capacity were identified. Bullock Pen has approximately 400 miles of distribution lines. There are approximately 3 miles of 2" lines; however, these are scheduled to be replaced with 6" lines in the future. All new lines will be 6" in diameter.

CHAPTER 6
WATER SUPPLIER SOURCE ASSESSMENT

I. INTRODUCTION

The City of Falmouth relies on the Licking River as a water supply source. The Bullock Pen Water District uses a combination of purchased water and water from Bullock Pen Lake. This chapter is an assessment of the amount of water available to each supplier under normal and drought conditions.

II. GEOLOGIC AND SOIL CONDITIONS

Geology

The geology of Pendleton County is best understood through the regional context of Northern Kentucky.

Bedrock in the Northern Kentucky region is almost exclusively Ordovician in age. Shale and limestone are the most dominant rock types. The predominant formations are the Richmond-Maysville limestones and the older Eden Shales. The most ancient of these Ordovician rocks can be found in the upper valleys of the Kentucky and Licking Rivers. Alluvium is associated with all major stream valleys.

The location on all streams is a result of the area's structural geology. The Jessamine Dome astride the Cincinnati Arch has created gorges in Central Kentucky which occur as relatively deep valleys in Northern Kentucky. Steep slopes are most notable adjacent to the ridge top terrain of the Outer Bluegrass at its contact with the Eden Shale Belt and adjacent to the Ohio River. Headward erosion has developed terrain of small hills most notable for the amount of land in slope rather than steepness.

The terminal moraine of the Illinoian Continental Glaciation parallels the Ohio River and is intermingled with the residual river hills. Soils of glacial origins are negligible. Pleistocene glaciation is responsible for locating the Ohio River channel, creating raised terraces and raising the levels of major valley floors, as that of the Kentucky River.

Ridge terrain is most extensive north of Williamstown to the west of Pendleton County. Urban locations tend to be on ridge lands, river terraces, at stream fords and at selected river locations. Flooding characterizes most stream site cities and some riverine terraces. Higher terraces and ridge sites are usually the most developable sites for housing, manufacturing, agriculture and transportation in terms of soil and terrain types.

The most abundant mineral found in the Outer Bluegrass Region is limestone. Commercial stone and gravel are processed in Pendleton, Gallatin, and Carroll Counties.

Soils

There are three major soil associations in Pendleton County: Eden, Otwell-Licking-Elk, and Lowell-Nicholson. Appendix E contains a generalized soils map.

Eden soils comprise 88 percent of the county's soils. Eden soils are described as moderately deep, sloping to steep, well-drained, with a clayey subsoil. They are typically found on ridgetops and hillsides.

Otwell-Licking-Elk soils make up 11 percent. These soils are deep, nearly level to moderately steep, well-drained, and with a loamy or clayey subsoil. These soils are found along stream terraces, primarily along the Licking River and its forks.

The remaining 1 percent of the soils are Lowell-Nicholson. These soils are described as deep, gently sloping to moderately steep, well-drained to moderately well-drained, with a clayey or loamy subsoil. They are found primarily on long, broad ridges in the northeastern part of the County.

Hydric Soils

Hydric soils are those soils which are saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions in the upper layer. Hydric soils may be an indication of wetlands. A wetland, under current definition, will include hydric soils, hydrophytic vegetation, and wetlands hydrology. In Pendleton County, there are approximately 360 acres (0.2%) of Robertsville silt loam, a hydric soil. This soil is found primarily in areas along the Licking River. There are also 340 acres (0.2%) of Newark silt loam which may contain small areas of hydric soil. Newark silt loam can be found along Grassy Creek in the northern portion of the County.

III. SOURCE ASSESSMENT

City of Falmouth

Falmouth's water source is the Licking River. 2000 withdrawals averaged 850,000 gallons a day and 2020 demand is projected at 1.6 mgd. The Licking River water level is controlled by releases from Cave Run Lake during low flow periods. The 7Q10 flow (the seven day, ten year low flow value) is 60 cfs. Without these releases, the natural 7Q10 would be around13 cfs. During the drought of 1930, the low flow was approximately 6 cfs.

To meet minimum adequacy standards, the 7Q10 must be greater than 0 or withdrawals cannot exceed more than 85 percent of the available water under normal conditions. Since normal flow data is not available, the assessment will compare current and projected water use to the 7Q10 value. The following calculations assess the adequacy of the source under current and projected demand.

7Q10 at Licking River Intake = 60 cfs
1 cubic foot = 7.4805195 gallons
7Q10 = 448.8 gallons per second
7Q10 = 38,776,320 gallons per day
Average 2000 Withdrawal = 850,000 gpd
Rate of Use = $\frac{850{,}000 \text{ gallons}}{38{,}776{,}320 \text{ gallons}} = 2.1\%$
Projected 2020 Demand = 1,600,000 gpd
Rate of Use = $\frac{1{,}600{,}000 \text{ gallons}}{38{,}776{,}320 \text{ gallons}} = 4.1\%$

Comparing current and projected demand to the 7Q10, it is apparent that the Licking River is an adequate source. However, the City of Falmouth, as mentioned previously, is currently planning a project that would install a low-level weir dam that would create a permanent pool around the intakes. This would be particularly useful during drought periods and also during periods of extreme cold when the river freezes. Map 5 shows the recommended protection area for the intake.

Bullock Pen Water District

Bullock Pen Water District's source is Bullock Pen Lake, which is an impoundment of Bullock Pen Creek. Bullock Pen Lake has an eight square mile watershed and a normal pool volume of 2,464 acre-feet or 803,264,000 gallons. Bullock Pen Water District has a variable permit limit ranging from 750,000 - 850,000 gpd. Average withdrawals range from 750,000 to 850,000 gpd. In the drought of the late 1980s, the level of water in the lake did drop to only 24 inches (our intakes are floating) above the intake, which was a source of concern. However, Bullock Pen Water District is not considered one of Kentucky's drought vulnerable water systems, undoubtedly because it has access to other sources as noted earlier.

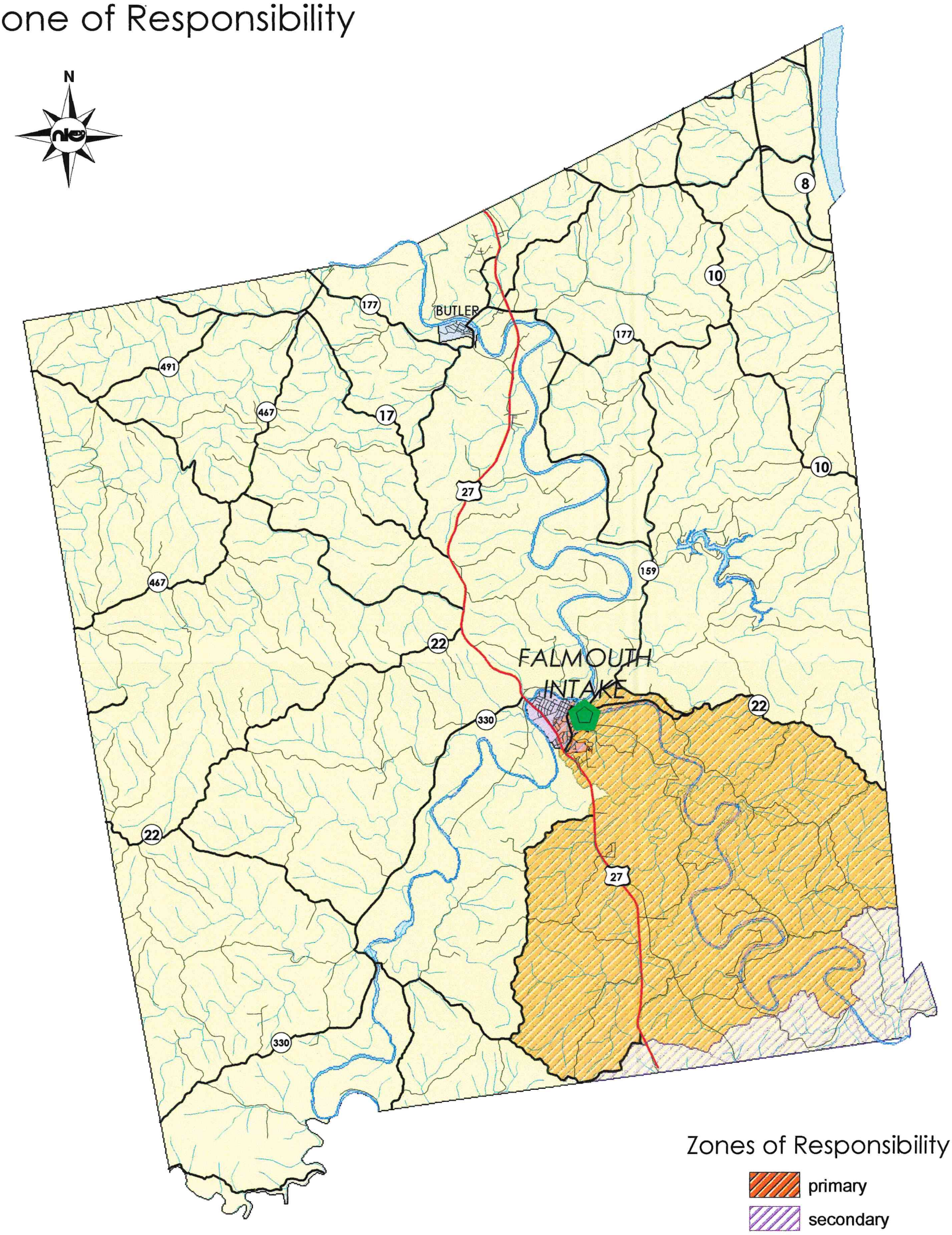
According to *minimum* standards for reservoirs with small contributing watersheds, as set forth in the water supply planning regulations, a source is adequate if the available volume at normal pool provides at least 200 days of supply at the average rate of water use. The following calculations show the number of days of supply at the average rate and the maximum permitted rate of 800,000 gpd.

Bullock Pen Lake Normal Pool Volume: 803,264,000 gallons
Bullock Pen Water District Average Daily Use from the Lake: 700,000 gallons
Number of Days to Deplete Source: 1,338
Number of Days to Deplete Source Using Maximum Withdrawal Limit: 1,004

Of course, as mentioned previously, Bullock Pen Water District currently purchases water to meet demand and this is expected to continue. According to projections, Bullock Pen's demand will exceed 800,000 gallons per day in 2000. It is unlikely that any additional permit increase will be approved given the lake's status as a state wildlife

Map 5
Falmouth Intake:
Zone of Responsibility

Pendleton County



Zones of Responsibility

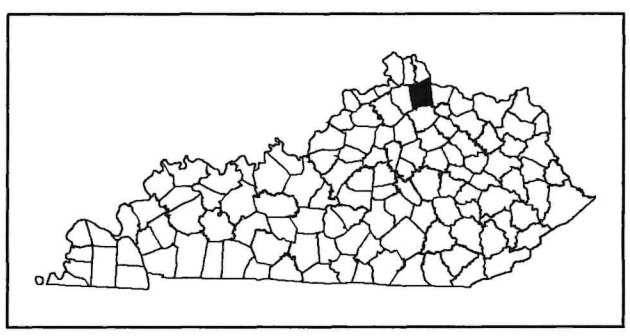
primary

secondary

Miles

1 0.5 0 1 2 3 4

1 inch equals 2 miles



and recreational area. Therefore, if relied upon as the sole supply, the lake would be an inadequate source in 2000.

The recommended protection area for Bullock Pen Lake is delineated in both the Grant County Water Supply Plan and the Boone County Water Supply Plan.

Table 6.1 shows the source availability for each of the water suppliers.

Table 6.1 - Source Availability

Public Water Supplier	Source	Source Type	Normal/1	Minimum/2	Drought/3
City of Falmouth	Licking River	Stream	Unknown	60 cfs	Unknown
Bullock Pen Water District	Bullock Pen Lake	Reservoir	803,264,000 gallons	Unknown	Unknown

Notes	*Stream*	*Reservoir*
/1	*Lowest Flow Month*	*Full Reservoir*
/2	*7Q10*	*7Q10 Inflow*
/3	*7Q20*	*7Q20 Inflow*

CHAPTER 7
WATER SUPPLY ADEQUACY

I. Adequacy Standards

The Pendleton County Water Supply Planning Council elected to plan for the provision of a continuous level of supply under all conditions while strongly encouraging conservation during times of drought or emergency.

II. Application of Adequacy Standards

City of Falmouth

As previously discussed in Chapter 6, the Licking River is an adequate source through the planning period. The proposal for a low-level weir dam could potentially impact the public dock, which is located directly below the intake. No other impacts on instream uses or downstream withdrawals are anticipated.

City of Butler

Purchasing water from Pendleton County Water District (PCWD) from a new 12" main installed recently and also have an emergency back-up for PCWD. The Licking River is an adequate source of supply through the planning period. However, as discussed in the Infrastructure Assessment, there is a proposal for Butler to purchase water from PCWD as part of a project that would interconnect PCWD and the Northern Kentucky Water District Service (NKWD). This project now completed eliminated Butler's withdrawals from the Licking River.

Bullock Pen Water District

The Bullock Pen Water District (BPWD) withdraws water from Bullock Pen Lake and purchases water from the Cities of Walton, Williamstown and NKWD. These multiple sources impact the application of adequacy standards. While forecast demand will exceed the permitted withdrawal limit (a maximum of 800,000 gpd) by 2005, the combination of purchased and treated water is adequate through the planning period (refer to Figure 5.27). The availability of purchased water from the City of Williamstown is assured through a contract that is in effect through 2015. However, with growth in the water supply service area, supply adequacy should be reviewed regularly.

As mentioned previously, the Department of Fish and Wildlife own the lake. Obviously those interests are paramount and increased withdrawals from the lake will not be permitted if they impact the lake in a negative manner.

CHAPTER 8
SUPPLY PROTECTION

I. RISKS

A. Licking River Intakes

Potential Contaminants

The City of Falmouth has an intake on the Licking River. A complete contaminant inventory was conducted in the Primary Zone of the intake. The Primary Zone begins ¼ mile below the intake and extends 5 miles above the intake. The outer boundaries are delineated by the watershed boundaries. The Secondary Zone extends from 5 miles to 10 miles above the intake and the Tertiary Zone extends from 10 miles to 25 miles above the intake.

Map 6 shows the location of potential contaminant sources and their identification numbers. Table 8.1 describes each of the contaminants by identification number. As a result of very steep topography, the majority of the potential contaminant sources are clustered around the urban areas. Table 8.2 groups potential Licking River contaminant sources by type and degree of hazard.

Soils

The primary soil association along the stream terrace is Otwell-Licking-Elk. This association is characterized by well-drained and moderately well-drained soils that have a clayey and loamy subsoil.

Security of Access

The intake structure for the City of Falmouth is locked; however, there is no security of access to the Licking River itself.

B. Bullock Pen Lake

Bullock Pen Lake, located on the border of Boone and Grant Counties and serving as one of the water sources for the Bullock Pen Water District, is a 134 acre man-made reservoir, owned and operated by the Kentucky Department of Fish and Wildlife Resources. There are no public recreational facilities and the area is a nature preserve. The 1996 Kentucky Report to Congress on Water Quality found that Bullock Pen Lake fully supported all its uses and was not impaired. Map 7 shows the location of potential contaminants to the Bullock Pen Lake water supply.

Map 6
Potential Contaminants

Pendleton County

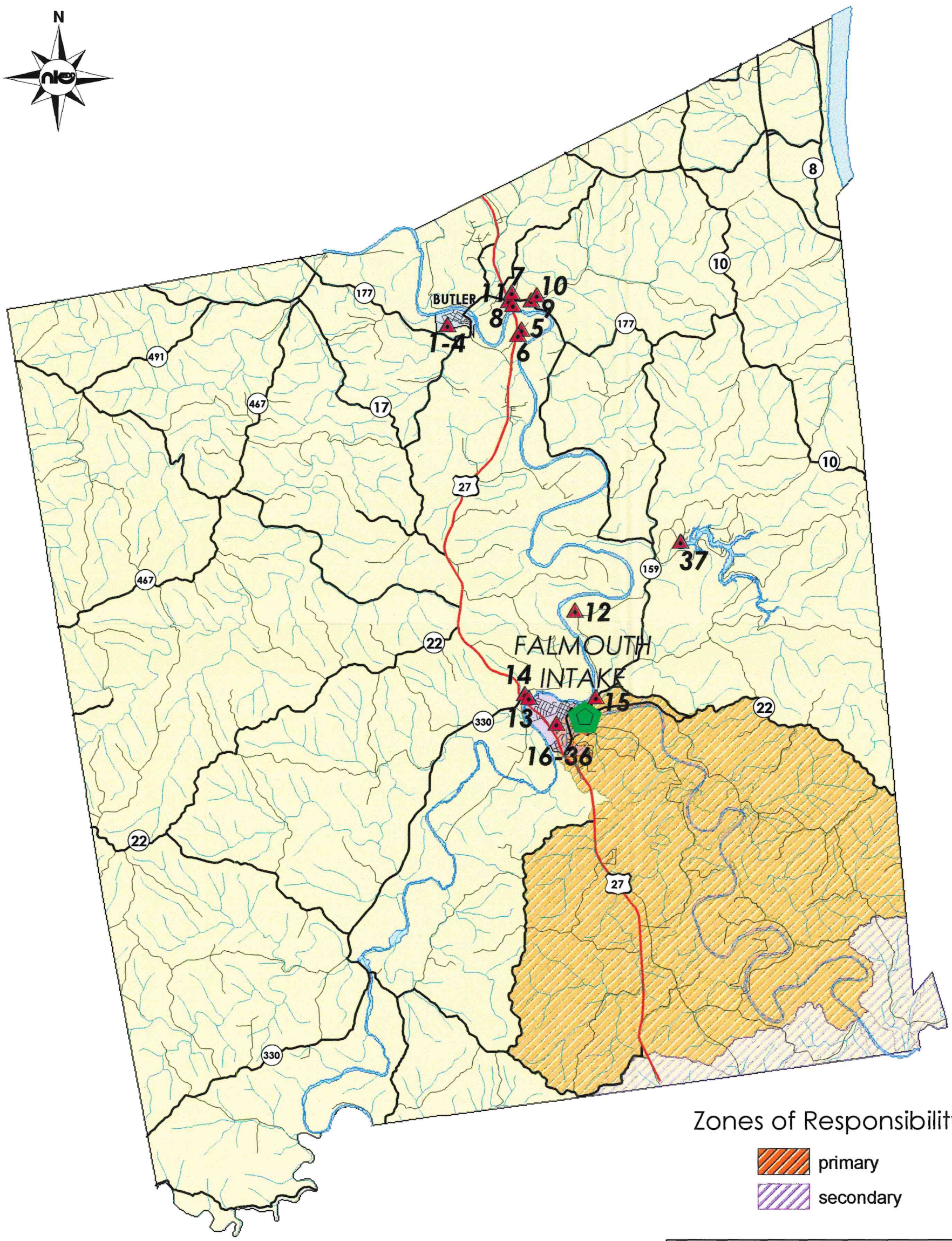


Table 8.1		
Licking River: Potential Contaminant Inventory		
INVENTORY NUMBER	**NAME**	**COMMENTS**
1	Bossart's Lawnmower Repair	May have solvents, oil, and gasoline on premises
2	Pittsfield of Kentucky	Manufacturer of industrial filters
3	Butler Products	RCRA Notifier
4	Cincinnati Bell Telephone - Butler Utility Station	1 UST - diesel
5	Industrial Park	Tentants include: Williams Cabinet Company(Cabinet makers), Sunrise Equipment and Jay Gee (both metal fabricators), and a construction company.
6	Licking River Shell Oil Company	Heating oil, gasoline, and kerosene, USTs
7	Shell Service Station	5 USTs (4 gasoline and 1 kerosene)
8	BP Garage and Service Station	USTs
9	Mago Hot Mix Asphalt	RCRA Notifier
10	Southdown Aggregates Asphalt - Butler Plant	Major generator of truck traffic in the County and 3 USTs
11	Northern Elementary School	1 UST - gasoline
No Number	City of Butler - Urban/Residential Concentration	Run-off could include pesticides, fertilizers, and improper disposal of household chemicals. Storm water run-off could include metals and oils from roofs, roads, and parking lots.
12	Hog Farm	Potential run-off of animal wastes
13	Auto Repair Garage	May have solvents, paints, oil, and gasoline on premises
14	Pendleton County School District Motorpool	Parked vehicles could potentially leak antifreeze, oil or gasoline. 1 UST - diesel
15	Falmouth Wastewater Treatment Plant	Discharge Point
16	Harts Auto Sales and Service	May have solvents, oil, and gasoline on premises
17	Dixie Oil Company	USTs
18	BP Service Station	USTs
19	Hyden Welding and Auto Repair	May have solvents, paints, oil, and gasoline on premises
20	Deluxe Cleaners	RCRA Notifier. 1 UST
21	Moore's Metal Fabricating	May have solvents and oil on premises
22	Larry Ritter Oil Company	USTs
23	We Care Auto Repair	May have solvents, paints, oil, and gasoline on premises
24	Falmouth Auto Body	May have solvents, paints, oil, and gasoline on premises. 2 USTs - gasoline

INVENTORY NUMBER	NAME	COMMENTS
25	Rail Yard - Intermodal Facility	Rail traffic could carry potential contaminants.
26	Falmouth Maintenance Garage	May have solvents, oil, and gasoline on premises
27	Marathon Gas	USTs
28	Shell Service Station	USTs
29	Butt's Ashland Station	USTs
30	Kwik Stop Gas	USTs
31	County Roads Department Storage Facility	May have solvents, oil, and gasoline on premises
32	European Connection - Sales and Service	Parked vehicles could potentially leak antifreeze, oil or gasoline.
33	Vege Manufacturing	RCRA Notifier - small quantity generator. USTs
34	Paynter's Generator Services	RCRA Notifier
35	Well's Open Air Market	USTs - 2 gasoline and 1 kerosene
36	Southern Elementary School	1 UST - gasoline
37	Kincaid Lake State Park	1 UST - gasoline
No Number	City of Falmouth - Urban/Residential Concentration	Run-off could include pesticides, fertilizers, and improper disposal of household chemicals. Storm water run-off could include metals and oils from roofs, roads, and parking lots.
No Number	Licking River	Primarily recreational uses such as canoeing; however, there is some motorized boating.
No Number	Septic systems (outside Falmouth and Butler)	May be aging or poorly maintained.
No Number	Road Run-off	Run-off surges could include oils and metals.
Note: Those companies associated with the Butler Intake should no longer be potential contaminantors because the intake has ceased production.		

Table 8.2

Licking River Intakes: Potential Pollutants and Degree of Hazard

SOURCES OF POLLUTION	SHORT-TERM VS. LONG-TERM HAZARD	CHANCE OF CONTAMINANT RELEASE	DEGREE OF HAZARD
Motorized River Traffic	Long-Term	Low to Moderate	High
USTs	Long-Term	Moderate	High
RCRA Notifiers	Long-Term	Low to Moderate	High
Permitted Sanitary Sewage Discharge	Long-Term	High	Low
Auto Repair & Body Shops	Long-Term	Low to Moderate	High
Road Run-off	Long-Term	Moderate to High	Low to High
Concentrated Urban/Residential Development	Long-Term	Moderate to High	Low to High
Livestock	Long-Term	Moderate to High	Low
Septic Systems (outside urbanized areas)	Long-Term	Moderate to High	Low

Map 7: Potential Pollutants: Bullock Pen Lake

Point Sources

There are 26 USTs located at the I-75 interchange. The Chevron USA service station is also a RCRA notifier. There are no known point source discharges to the lake. A potential point source could be the railroad tracks, which are partially located in the protection area. Septic systems around the lake, if aging or poorly maintained, are potential pollutants.

Non-Point Sources

There is little development in the recommended protection area surrounding the lake; however; the limited residential and agricultural uses may pose a slight threat. Another potential source of non-point pollution is Interstate 75, which is located in the watershed. Run-off from the Interstate could possibly be polluted with motor oil, gasoline, road salt, or herbicides (from roadside spraying). Tankers traveling the highway carrying hazardous waste are also a potential threat if an accident occurred. Table 8.3 shows potential sources of point and non-point source pollution, the risk of release, and the degree of hazard. Residential development refers to potential sources of pollution that may be associated with residential land use such as lawn care chemicals and improper disposal of household chemicals.

Soils

A review of the soil survey shows the primary soil in the watershed is Eden silty clay loam (EdE2) which is well-drained with a loamy to clayey surface layer and a clayey lower subsoil.
Permeability of the soil is categorized as moderately slow to slow with a permeability of less than two inches per hour.

Security of Access

The Kentucky Department of Fish and Wildlife, as mentioned previously, owns the lake and limits activity on the lake to fishing and the area is a nature preserve; however, there is no security of access to the lake. There is a road that passes over the lake and there are several roads around it as well. Furthermore, no limitations to access are anticipated during the planning period.

II. PROTECTION MEASURES

The primary focus of this section is on local, rather than state and federal, regulatory and non-regulatory protection measures for Pendleton County's water supply.

Regulatory and Non-Regulatory Protection Measures

No regulatory or non-regulatory measures that specifically address protection of the water supply were identified. However, the County's solid waste plan does address the

Table 8.3

Bullock Pen Lake: Potential Pollutants and Degree of Hazard

SOURCES OF POLLUTION	SHORT-TERM VS. LONG-TERM HAZARD	CHANCE OF CONTAMINANT RELEASE	DEGREE OF HAZARD
Septic Tanks	Long-Term	Moderate to High	Low
Residential Development	Long-Term	Low	Low to Moderate
Agriculture	Long-Term	Low to Moderate	Low to Moderate
Interstate Run-off	Long-Term	Low to Moderate	Low to High
Railroad Tracks	Long-Term	Low	Low to High

storage, collection, transportation, processing, and disposal of solid waste (See Appendix H).

Supply Protection Recommendation

A public hearing on supply protection recommendations was held April 21, 1998. The meeting was advertised in the Falmouth Outlook (See Appendix B for a copy of the notice); however, no members of the public were in attendance. The following recommendations were adopted at the April 21, 1998 meeting of the Pendleton County Water Supply Planning Council.

1. Work with the Natural Resource Conservation Service and the Cooperative Extension Office to promote "best management practices" for agricultural and construction activities.

2. Provide assistance to the County Solid Waste Coordinator to clean-up dump sites, promote proper disposal, and further public awareness and education.

3. Promote the expansion of sewer service to currently unserved areas located in the watershed of the Licking River.

4. Promote the development of land use controls, including sub-division regulations that protect existing water sources.

5. Support the activities of the Licking River Watershed Watch.

CHAPTER 9
WATER RESOURCES INVENTORY

As detailed in Chapters 6 and 7, Pendleton County's sources have been determined to be adequate. Therefore, an inventory of water resources was not conducted.

CHAPTER 10
WATER SUPPLY ALTERNATIVES

Existing water sources have been determined to be adequate and therefore, research into alternatives was unnecessary. However, the Water Supply Planning Council, as a result of joint meeting with the Grant County Water Supply Planning Council, does support the construction of a new reservoir to serve as a regional water supply source. Below is the executive summary from the feasibility study. Also, Appendix A contains minutes of joint meetings.

In May 2001, the Project Team of Quest Engineers and Fuller, Mossbarger, Scott and May Engineers, Inc. (FMSM) was selected by the Lake Williamstown Expansion Committee to conduct a feasibility study to evaluate three potential dam sites downstream of the existing dam structure. The proposed dam would be constructed in a manner that would match the normal pool of the existing lake. The scope of work for this study included a walkover of the three dam sites, a field reconnaissance of the stream corridor, a records review of various public databases, a hydraulic/hydrologic analysis, a yield analysis, an opinion of probable construction costs, and a preliminary geotechnical exploration of the recommended site.

The dam site walkovers and stream corridor reconnaissance were conducted in the summer of 2001. During the walkovers, no surface features were observed that would preclude further planning at any of the three sites. A large drainage swale was observed at the left abutment of Dam Site 1. While not inhibiting the siting of a dam at this location, this type feature typically requires significant undercutting to remove unsuitable foundation materials. The stream reconnaissance also yielded similar findings. No significant features were observed that would prohibit further planning at any of the three sites. Wetland indicators were observed throughout the corridor, primarily within the stream banks. A delineation is necessary to fully evaluate wetland permitting issues.

The environmental and cultural records review focused on identification of possible endangered or threatened species; cultural, archaeological, or historic resources; hazardous waste and Superfund sites; and environmentally protected or special habitat areas. Based on a review of public databases, no environmental or cultural features were identified within the impoundment areas of the three sites. One special concern animal, Ammodramus henslowii (Henslow's Sparrow), was identified as possibly existing in the study area.

The engineering analysis consisted of a hydrologic and hydraulic evaluation as well as a yield analysis. The proposed dam will be classified as Class C – High Hazard Dam, according to 401 KAR 4:030. Using the guidelines for this classification, hydrologic and hydraulic calculations resulted in the spillway crest and top of dam elevation for each site being sited at approximately 785 and 800 feet, respectively. From these results the dam height ranged from 115 feet at Dam Site 1 to 150 feet at Dam Site 3.

Water supply capacity at each site was determined by a yield analysis. The results indicate reservoirs at the three locations should be capable of supplying eight to ten million gallons of water per day for municipal use. At demands greater than ten mgd, the reservoirs will not rebound adequately. In addition, the yield analysis estimated the time to fill each reservoir. Assuming monthly stream flow rates, the filling rates for Dam Site 1, Dam Site 2, and Dam Site 3 are 2.5, 4.5, and 5.5 years, respectively.

Embankment quantities were estimated based upon a conceptual dam section. This section consists of 3 horizontal to 1 vertical (3H:1V) side slopes with 20-foot wide horizontal benches placed at 50-foot vertical intervals. The center of the dam was assumed to be a low permeable clay core with an outer shell of random earth and rock. Based on this template, the total embankment quantities for Dam Site 1, Dam Site 2, and Dam Site 3 are 930,000, 1,655,000, and 1,960,000 cubic yards, respectively.

From an embankment volume versus yield perspective, Dam Site 1 appears to be the most efficient and as a result the preliminary geotechnical exploration was performed at this location to evaluate possible borrow sources and understand site geology. Three rock core borings were drilled along the approximate dam centerline and two additional rock core borings were positioned on the ridges upstream of the site. At each of the five boring sites, topsoil was generally shallow in thickness. The rock encountered was consistent with the Kope Formation described in the USGS Goforth 7 ½ –Minute Geologic Quadrangle Map. Rock was highly weathered 15 to 20 feet below top of rock, with weathered zones to approximately 30 feet below top of rock. In addition, water pressure tests resulted in the limestone beds located throughout the sampled depth.

Sixteen test pits were excavated along the ridges to the north and south of Dam Site 1 to evaluate potential clay borrow. Because of shallow soil depths and high rock content observed in the majority of the test pits, the areas explored are not considered economical as a source of clay soil borrow. The shale beneath the site is soft and readily breaks down to a soil-like material when exposed. The shale may be a suitable source for low permeable core construction and should be given further consideration during future planning.

An opinion of the probable construction costs was developed. Construction costs included a 20 percent contingency and 20 percent for engineering. The opinion of the probable construction costs for Dam Site 1, Dam Site 2, and Dam Site 3 are $18,200,000, $28,300,000, and $31,600,000, respectively. The construction cost opinions presented do not include recreational facilities, improvements to existing facilities, modification to intake structure, environmental mitigation, or property acquisition costs.

CHAPTER 11
PRIMARY WATER SUPPLY ALTERNATIVE

Since existing water sources have been determined to be adequate, selection of a primary water supply was unnecessary. However, as mentioned in Chapter 10, the Water Supply Planning Council does support the creation of a regional water supply reservoir as detailed in Chapter 10 and the Grant County Water Supply Plan. The reservoir would provide another source of water for the County in addition to the Licking River (which can have low flows during drought conditions) and purchased water from the Northern Kentucky Water Service District (via wholesale sales to the Pendleton County Water District). A new reservoir would also be a regional recreational asset and economic development tool.

CHAPTER 12
EMERGENCY PLANS

I. WATER SHORTAGE RESPONSE PLANS

Since no drought vulnerability was associated with any of the County's water sources, water shortage response plans were not prepared. However, the utilities are currently reviewing water shortage response plans that other counties have prepared. It is anticipated that the preparation of a coordinated water shortage response plan will be an implementation activity.

II. CONTAMINATION RESPONSE PLANS

A. City of Falmouth

Notification Procedures

In the event of contamination of the Licking River, the Utility Superintendent would be responsible for all notifications. Pendleton and East Pendleton County Water Districts would be notified immediately. They would be briefed on the situation with regard to the suspected extent and duration of such contamination. They would be advised of the action being taken at the treatment facility and would receive frequent updates on the situation. Public notification would be accomplished through the newspaper and local television and radio stations. Public notification would include any actions that the customer may need to take, such as boiling water.

Emergency Water Sources

In a short-term emergency, Falmouth would rely on its 1.62 mg of storage and shut-down its intakes until the threat had passed. With existing storage capacity, it is anticipated that there would be approximately 24 hours of supply in the City of Falmouth and the northern part of the County (wholesale customers). The southern part of the County, served by the East Pendleton County Water District, would have 48 to 72 hours of supply. In a long-term emergency, interconnection with other utilities would be pursued.

Distribution System Problems

A 600,000-gallon storage tank built in 2000 alleviated any distribution problem.

Threat of Contamination

Upon a threat of potential contamination, the Superintendent would review the situation and determine what actions should be taken. A scheduling of raw and finished water would be determined along with any other necessary protective actions. The Superintendent would be responsible for any notifications deemed necessary, including the public, the other utilities, and state and federal agencies.

B. Bullock Pen Water District

Notification Procedures

The General Manager would be responsible for notifying the public and applicable state and federal agencies. Public notifications would be accomplished through the newspaper and local radio and television stations.

Emergency Water Sources

Bullock Pen has 925,000 gallons of storage, which would probably last 36 hours at normal usage levels. Since Bullock Pen uses water from a variety of sources (Bullock Pen Lake, purchased water from Walton and Williamstown), in a contamination event, it would be possible to rely more heavily on the unaffected sources. If Bullock Pen Lake experienced a long-term contamination event, the utility would have to rely solely on purchased water.

Distribution System Problems

No distribution problems were identified that would affect the ability of the Water District to cope with a contamination event.

Threat of Contamination

If there were a threat of contamination, the treatment plant would be shut down until testing assured that the water is safe. Purchased water should be used exclusively during that period.

CHAPTER 13
IMPLEMENTATION PLAN

I. ANNUAL MEETING

The Pendleton County Water Supply Planning Council will meet annually at the office of the Pendleton County Industrial Authority.

II. PLAN UPDATES AND AMENDMENTS

Once the Division of Water has approved the Pendleton County Water Supply Plan, all participants will receive a hard copy of the plan. The Pendleton County Fiscal Court will also receive a diskette with all the plan documents so any necessary changes or revisions can be made. NKADD will be available to provide this service on a contractual basis, if so desired.

III. IMPLEMENTATION

Since the water supply for the County was considered to be adequate, plan implementation will be focused on following activities.

1. Continuing to work with the Grant County Water Supply Planning Council to develop a regional water supply reservoir.

2. Working to expand waterlines to unserved areas wherever feasible. One potential project being developed for submission to the Department of Local Government as a Community Development Block Grant application includes extending waterlines to Catawba Road, Richland Road, KY 1053, US 27 (southern portion), Falmouth-Lenoxburg Road, and Concord-Caddo Road. The preliminary project cost is estimated at $1,707,000. Potential funding sources include Rural Development grant and loan, Community Development Block Grant, and a local cash match. *This project was completed February 2002.*

3. Promoting the supply protection recommendations, most of which involve environmental education and coordination functions.

4. Working on water shortage response plans with the goal of adopting relatively uniform policies and coordinated procedures.

5. Completing KIA 2020 projects for Pendleton County. Project profiles can be found in Chapter 14.

CHAPTER 14
PLANNED EXPANSIONS AND IMPROVEMENTS

The Commonwealth has set the goal of making potable water available to all Kentuckians, by 2020. This chapter includes the water project profiles submitted to Kentucky Infrastructure Authority (KIA) to achieve that goal. They include all planned expansions and improvements in Pendleton County for the next 20 years. Pendleton County is very committed to this goal as well.

KENTUCKY
WATER
PROJECT PROFILE

1. **Project Title:**

Falmouth Low Level Weir Dam

2. **Project Description:**

Provide a brief narrative denoting if project relates to source, distribution, treatment, storage or other)

The City of Falmouth is a regional supplier of water and owns and operates a 2.0 MGD WTP. The Licking River is the raw water source and provides an adequate supply of water. However, on several occasions, during drought conditions the river level falls close to the low level intake and the City has been forced to secure a permit for a temporary dam. This project consists of the construction of a low level weir dam on the Licking, approximately 890 feet upstream of the KY 22 bridge. The dam has a weir length of approx. 190 feet and an overall length of 214 feet.

WRIS Project Number (PNUM): * WX21191311

*This number shall be assigned by the ADDs through the Area Water Management Planning Councils and will tie each project to mapped/spatial information in the Water Resource Information System (WRIS). Submitted projects without this number AND the appropriate mapped/spatial information will NOT be accepted. (WX_____)

Project County: PENDLETON

3. **Legal Applicant**

Applying Entity: City of Falmouth

Authorized Official Information

First Name: Gene Last Name: Flaugher M.I.:

Title: Mayor

Street Address Line 1: City of Falmouth

Street Address Line 2: 230 Main Street

P.O. Box:
City: Falmouth State: KY Zip: 41040
County: Pendleton
Telephone: (859) 654-6937 Ext:
Fax: (859) 654-3603
Email:

Contact Person Information

First Name: Mitchell Last Name: Bill M.I.:
Title: Staff
Street Address Line 1: PO Box 213
Street Address Line 2:
P.O. Box:
City: Falmouth State: KY Zip: 41040
County: Pendleton
Telephone: (859) 278-5412 Ext:
Fax: (859) 278-2911
Email:

Project Administrator Information

First Name: Mitchell Last Name: Bill M.I.:
Title: Staff
Street Address Line 1: PO Box 213
Street Address Line 2:
P.O. Box:
City: Falmouth State: KY Zip: 41040
County: Pendleton
Telephone: (859) 278-5412 Ext:
Fax: (859) 278-2911

Email: moadlon@hotmail.com

Consulting Engineer Information

First Name: James Last Name: Roberts M.I.: K

Firm: Howard K. Bell Engineers, Inc.

Street Address Line 1: 354 Waller Avenue

Street Address Line 2:

P.O. Box: P.O. Box 546

City: Lexington State: KY Zip: 40585-0546

County: Fayette

Telephone: (859) 278-5412 Ext:

Fax: (859) 278-2911

Email:

If water project
PWSID#

0010082
0010702
0020386
0020956
0030007

4. **Application:**

(•) New ( ) Revision

If revision, originally directed to: (agency)

5. **Project Type (check all that apply):**

[x] Planning
[x] Design
[x] Construction
[ ] Management

6. **Project Alternatives: Please list a minimum of three:**

a. Construction of intake and pump station at Kincaid Lake and pipe water to WTP.

b. Continue to operate without dam and seek permit for temporary construction or purchase water rights from Cave Run.

c. Modifications to existing intake structure and pump station.

7. Special Impact(s) of Proposed Water Project:

a. New service/improve service to 0 unserved 1800 underserved households

b. Number of new jobs: 0 Number of retained jobs: 200

c. Other beneficial technical, managerial, fiscal impacts: (20 words or less)

Problems with WTP operation during drought conditions will be eliminated.

d. Rate impact/reasonableness of cost:

Grant funds will maintain rates at affordable levels, particularly for Pendleton WD($28.70/4000 gal) and East Pendleton ($34.27/4000gal).

e. If proposed extension of service to existing home is related to public health protection, please describe the source water quality and availability:

8. Median Household Income of Service Area:

$ 25000

9. Project Start Schedule:

◉ Years 0-2 ○ Years 3-10 ○ Years 11-20

10. Estimated Funding Sources:

TABLE 1: ESTIMATED FUNDING

	Total	DWSRF/ KIA-Fund F Amount Water	CDBG Amount	RD Amount	Other (name)	Other (name) Amount
0-2 Years	1000000	500000	0	500000		0

3-10 Years	0	0	0	0		0
11-20 Years	0	0	0	0		0
TOTAL	1000000	500000	0	500000		0

11. Project Data - Water (complete all items which apply to your project)

Source Protection

Acres 0

Cost ($acre) 0

Use control (r/c)

Drinking Water Facilities

a. Source (gpd)

Number of new surface/spring sources 1 Total GPD 2000000

Number of new wells 0 Total GPD 0

Elimination of Public Water Systems through Mergers

0 Systems serving 500 or fewer population

0 Systems serving 501-3,000 population

0 Systems serving 3,001-10,000 population

0 Systems serving 10,001 or greater population

Interconnections

0 Elimination of water treatment plants

0 Supplemental potable water supply

0 Emergency backup potable water supply

Source Water Quantity and Quality

☐ Replace existing raw water source

☐ Supplemental existing raw water source

Briefly describe why the above items apply to your project:

Falmouth WTP serves City (pop. 2400), East Pendleton WD and Pendleton WD. Project provides a drought source.

b. Water Treatment

Proposed design capacity [2] MGD (as a result of this project)

Project will involve expansion or modification of

Microbiology and Turbidity

☐ Pre-filtration

☐ Filtration

☐ Disinfection Process

Best Available Technologies

☐ VOCs ☐ IOCs ☐ SOCs ☐ Radionuclides

☐ Disinfectants ☐ Disinfection by-products

☐ Secondary contaminants [ ]

Briefly describe why the above items, if checked, apply to your project:

[ ]

c. Water Distribution (Rehab/Improvements)

Proposed project involves construction of line

Total linear feet [0]

Line Size (in inches) ☐ 2 ☐ 3 ☐ 4 ☐ 6 ☐ 8 ☐ 10 ☐ greater than 10

Material ☐ Ductile Iron ☐ PVC ☐ PE Other [ ]

Project activity improves pressure, as a result of

Replacement of [0] total linear feet of inadequately sized lines

[0] total gallons of increased storage: Required to overcome inadequate distribution storage

☐ Leaks, Breaks, or restrictive flows due to age

Project activity improves water quality by providing:

☐ Adequate turnover of water

☐ Proper maintenance of disinfection residual

Replacement of [0] total linear feet of lead, copper, asbestos-cement lines

Briefly describe why the above items apply to your project:

[ ]

d. Management (describe)

The City of Falmouth has a well maintained and appropriately staffed WTP (per DOW requirements) which was upgraded in 1992.

e. Other (describe)

Cost of project is directly related to potential DOW and COE impact studies regarding concrete vs. rubber dam.

Total Estimated Project Cost $ 1000000

Signature Page

KENTUCKY
WATER
PROJECT PROFILE

1. Project Title:

Pendleton Co. Water Main Extensions - Phase I & II

2. Project Description:

Provide a brief narrative denoting if project relates to source, distribution, treatment, storage or other)

Distribution project designed to provide an adequate, safe and affordable supply of water to 138 households along 10 roads in Pendleton Co. Aprroximately 12.3 miles of waterlines (11.2 customers per mile) will be installed and elements will include: 4,000 LF of 8" DI, 2,000 LF of 8" PVC, 15,000 LF of 6" PVC, 16,700 LF of 4" PVC, and 27,700 LF of 3" line, and all necessary appurtenances. All "other" funds for project are secured and the project has been submitted to clearinghouse.

WRIS Project Number (PNUM): * WX21191312

*This number shall be assigned by the ADDs through the Area Water Management Planning Councils and will tie each project to mapped/spatial information in the Water Resource Information System (WRIS). Submitted projects without this number AND the appropriate mapped/spatial information will NOT be accepted. (WX_____)

Project County: PENDLETON

3. Legal Applicant

Applying Entity: Pendleton County

Authorized Official Information

First Name: Henry Last Name: Bertam M.I.: W

Title: Judge Executive

Street Address Line 1: 233 Main Street

Street Address Line 2: Room 4

P.O. Box:

City: Falmouth State: KY Zip: 41040

County: Pendleton

Telephone: (859) 654-4321 Ext:

Fax: (859) 654-5047

Email: pendjud@fuse.net

Contact Person Information

First Name: Morag Last Name: Adlon M.I.: B

Title: Development Planner

Street Address Line 1: Northern Kentucky ADD

Street Address Line 2: 22 Spiral Drive

P.O. Box:

City: Florence State: KY Zip: 41042

County: Boone

Telephone: (859) 283-1885 Ext:

Fax: (859) 283-8178

Email: moadlon@hotmail.com

Project Administrator Information

First Name: Morag Last Name: Adlon M.I.: B

Title: Development Planner

Street Address Line 1: Northern Kentucky ADD

Street Address Line 2: 22 Spiral Drive

P.O. Box:

City: Florence State: KY Zip: 41042

County: Boone

Telephone: (859) 283-1885 Ext:

Fax: (859) 283-8178

Email: moadlon@hotmail.com

Consulting Engineer Information

First Name: Don Last Name: Willingham M.I.:

Firm: PDR Engineers, Inc.

Street Address Line 1: 800 Corporate Drive

Street Address Line 2: Suite 100

P.O. Box:

City: Lexington State: KY Zip: 40503

County: Fayette

Telephone: (859) 223-8000 Ext:

Fax: (859) 224-1025

Email: dwillingham@pdreng.com

If water project
PWSID#

0010082
0010702
0020386
0020956
0030007

4. **Application:**

(•) New ( ) Revision

If revision, originally directed to: (agency)

5. **Project Type (check all that apply):**

- [ ] Planning
- [x] Design
- [x] Construction
- [ ] Management

6. **Project Alternatives: Please list a minimum of three:**

a. Install different sized lines - proposed determined most appropriate.

b. Reduce scope of project - decreases beneficial impact of potable water.

c. Serve other areas - proposed are identifed as high priority

7. Special Impact(s) of Proposed Water Project:

a. New service/improve service to 138 unserved 0 underserved households

b. Number of new jobs: 0 Number of retained jobs: 0

c. Other beneficial technical, managerial, fiscal impacts: (20 words or less)

Joint project between 2 Districts - joint procurement, bidding - cost savings on construction.

d. Rate impact/reasonableness of cost:

PCWD - current rate $28.70/ 4,000 gal. EPWD - $34.27/ 4,000 gal. Both Districts have pending rate increases.

e. If proposed extension of service to existing home is related to public health protection, please describe the source water quality and availability:

Project includes 138 households reliant on inadequate, leaking cisterns. Suspected water contamination.

8. Median Household Income of Service Area:

$ 25000

9. Project Start Schedule:

(●) Years 0-2 ( ) Years 3-10 ( ) Years 11-20

10. Estimated Funding Sources:

TABLE 1: ESTIMATED FUNDING

	Total	DWSRF/ KIA-Fund F Amount Water	CDBG Amount	RD Amount	Other (name)	Other (name) Amount
0-2 Years	884860	414823	0	0	HB502 Funds + Tap Fees	470037

3-10 Years	0	0	0	0		0
11-20 Years	0	0	0	0		0
TOTAL	884860	414823	0	0		470037

11. Project Data - Water (complete all items which apply to your project)

Source Protection

Acres 0

Cost ($acre) 0

Use control (r/c)

Drinking Water Facilities

a. Source (gpd)

Number of new surface/spring sources 0 Total GPD 0

Number of new wells 0 Total GPD 0

Elimination of Public Water Systems through Mergers

0 Systems serving 500 or fewer population

0 Systems serving 501-3,000 population

0 Systems serving 3,001-10,000 population

0 Systems serving 10,001 or greater population

Interconnections

0 Elimination of water treatment plants

0 Supplemental potable water supply

0 Emergency backup potable water supply

Source Water Quantity and Quality

☐ Replace existing raw water source

☐ Supplemental existing raw water source

Briefly describe why the above items apply to your project:

The KY 491 line will provide a connection with Bullock Pen Water District in Grant county.

b. Water Treatment

Proposed design capacity [0] MGD (as a result of this project)

Project will involve expansion or modification of

Microbiology and Turbidity

☐ Pre-filtration

☐ Filtration

☐ Disinfection Process

Best Available Technologies

☐ VOCs ☐ IOCs ☐ SOCs ☐ Radionuclides

☐ Disinfectants ☐ Disinfection by-products

☐ Secondary contaminants [ ]

Briefly describe why the above items, if checked, apply to your project:

[ ]

c. Water Distribution (Rehab/Improvements)

Proposed project involves construction of line

Total linear feet [5127]

Line Size (in inches) ☐ 2 ☑ 3 ☑ 4 ☑ 6 ☑ 8 ☐ 10 ☐ greater than 10

Material ☑ Ductile Iron ☑ PVC ☐ PE Other [ ]

Project activity improves pressure, as a result of

Replacement of [0] total linear feet of inadequately sized lines

[0] total gallons of increased storage: Required to overcome inadequate distribution storage

☐ Leaks, Breaks, or restrictive flows due to age

Project activity improves water quality by providing:

☐ Adequate turnover of water

☐ Proper maintenance of disinfection residual

Replacement of [0] total linear feet of lead, copper, asbestos-cement lines

Briefly describe why the above items apply to your project:

[New lines to unserved households.]

d. Management (describe)

Pendleton and East Pendleton WD are well managed and efficient. Maintenance and water losses are within PSC limits.

e. Other (describe)

Project is "ready to go". All funding secured($400,000 from 502 allocation). Clearinghouse submission in May(SAI# KY0105300853)

Total Estimated Project Cost $ 884860

Signature Page

KENTUCKY
WATER
PROJECT PROFILE

1. Project Title:

Pendleton Co. Water Main Extensions - Phase III

2. Project Description:

Provide a brief narrative denoting if project relates to source, distribution, treatment, storage or other)

This proposed distribution project includes design and construction of approximately 17 miles of waterline, and all appurtenances, along KY 467 and Locust Grove roads in Pendleton county which will serve 194 households. CDBG funds are also being requested because of the low and moderate income levels in these areas as well as the high number of customers per mile (11.4). Problems currently experienced by residents in the area include: high cost of hauled water, inadequate or faulty cisterns, and in some instances documented contamination.

WRIS Project Number (PNUM): * WX21191310

*This number shall be assigned by the ADDs through the Area Water Management Planning Councils and will tie each project to mapped/spatial information in the Water Resource Information System (WRIS). Submitted projects without this number AND the appropriate mapped/spatial information will NOT be accepted. (WX_____)

Project County: PENDLETON

3. Legal Applicant

Applying Entity: Pendleton County

Authorized Official Information

First Name: Henry Last Name: Bertram M.I.: W

Title: Judge Executive

Street Address Line 1: 233 Main Street

Street Address Line 2: Room 4

P.O. Box:

City: Falmouth State: KY Zip: 41040

County: Pendleton

Telephone: (859) 654-4321 Ext:

Fax: (859) 654-5047

Email: pendjud@fuse.net

Contact Person Information

First Name: Morag Last Name: Adlon M.I.: b

Title: Development Planner

Street Address Line 1: Northern Kentucky ADD

Street Address Line 2: 22 Spiral Drive

P.O. Box:

City: Florence State: KY Zip: 41042

County: Boone

Telephone: (859) 283-1885 Ext:

Fax: (859) 283-8178

Email: moadlon@hotmail.com

Project Administrator Information

First Name: Morag Last Name: Adlon M.I.: B

Title: Development Planner

Street Address Line 1: Northern Kentucky ADD

Street Address Line 2: 22 Spiral Drive

P.O. Box:

City: Florence State: KY Zip: 41042

County: Boone

Telephone: (859) 283-1885 Ext:

Fax: (859) 283-8178

Email: moadlon@hotmail.com

Consulting Engineer Information

First Name: Don Last Name: Willingham M.I.:

Firm: PDR Engineers, Inc.

Street Address Line 1: 800 Corporate Drive

Street Address Line 2: Suite 100

P.O. Box:

City: Lexington State: Zip: 40503

County: Fayette

Telephone: (859) 223-8000 Ext:

Fax: (859) 224-1025

Email: dwillingham@pdreng.com

If water project
PWSID#

0010082
0010702
0020386
0020956
0030007

4. **Application:**

(•) New ( ) Revision

If revision, originally directed to: (agency)

5. **Project Type (check all that apply):**

- [ ] Planning
- [x] Design
- [x] Construction
- [ ] Management

6. **Project Alternatives: Please list a minimum of three:**

a. Re-size lines - 8" is required because of recent growth in area.

b. Eliminate Ductile Iron pipe and reduce cost - Approx. 7,500 L.F. of DI is required due to terrain in area.

c. Select other areas - This area is low and moderate income, has water problems and has a high number of households (11.4 customers per mile)

7. Special Impact(s) of Proposed Water Project:

a. New service/improve service to 194 unserved 0 underserved households

b. Number of new jobs: 0 Number of retained jobs: 0

c. Other beneficial technical, managerial, fiscal impacts: (20 words or less)

Adding 194 customers (11.4 customers per mile) is economically sound for the water district.

d. Rate impact/reasonableness of cost:

Current rates are $28.70 per 4,000 gallons. An increase is pending for a $31.00/ 4,000 gal. rate.

e. If proposed extension of service to existing home is related to public health protection, please describe the source water quality and availability:

Existing households primarily use cisterns. Some are totally inadequate and leaking. Suspected waterbourne illness in area.

8. Median Household Income of Service Area:

$ 25000

9. Project Start Schedule:

◉ Years 0-2 ○ Years 3-10 ○ Years 11-20

10. Estimated Funding Sources:

TABLE 1: ESTIMATED FUNDING

	Total	DWSRF/ KIA-Fund F Amount Water	CDBG Amount	RD Amount	Other (name)	Other (name) Amount
0-2 Years	1584430	792215	746455	0	Tap Fees (Over income)	45760

3-10 Years	0	0	0	0		0
11-20 Years	0	0	0	0		0
TOTAL	1584430	792215	746455	0		45760

11. Project Data - Water (complete all items which apply to your project)

Source Protection

Acres 0

Cost ($acre) 0

Use control (r/c)

Drinking Water Facilities

a. Source (gpd)

Number of new surface/spring sources 0 Total GPD 0

Number of new wells 0 Total GPD 0

Elimination of Public Water Systems through Mergers

0 Systems serving 500 or fewer population

0 Systems serving 501-3,000 population

0 Systems serving 3,001-10,000 population

0 Systems serving 10,001 or greater population

Interconnections

0 Elimination of water treatment plants

0 Supplemental potable water supply

0 Emergency backup potable water supply

Source Water Quantity and Quality

☐ Replace existing raw water source

☐ Supplemental existing raw water source

Briefly describe why the above items apply to your project:

The KY 467 line will enable a connection between the City of Williamstown and Pendelton county.

b. Water Treatment

Proposed design capacity 0 MGD (as a result of this project)

Project will involve expansion or modification of

Microbiology and Turbidity

☐ Pre-filtration

☐ Filtration

☐ Disinfection Process

Best Available Technologies

☐ VOCs ☐ IOCs ☐ SOCs ☐ Radionuclides

☐ Disinfectants ☐ Disinfection by-products

☐ Secondary contaminants

Briefly describe why the above items, if checked, apply to your project:

c. **Water Distribution (Rehab/Improvements)**

Proposed project involves construction of line

Total linear feet 13658

Line Size (in inches) ☐ 2 ☑ 3 ☑ 4 ☑ 6 ☑ 8 ☐ 10 ☐ greater than 10

Material ☑ Ductile Iron ☑ PVC ☐ PE Other

Project activity improves pressure, as a result of

Replacement of 0 total linear feet of inadequately sized lines

0 total gallons of increased storage: Required to overcome inadequate distribution storage

☐ Leaks, Breaks, or restrictive flows due to age

Project activity improves water quality by providing:

☐ Adequate turnover of water

☐ Proper maintenance of disinfection residual

Replacement of 0 total linear feet of lead, copper, asbestos-cement lines

Briefly describe why the above items apply to your project:

Will provide system-wide benefit and turnover by looping lines within system.

d. Management (describe)

PCWD has an excellent O & M track record.

e. Other (describe)

Farm community was hard hit by tobacco losses. Added benefit - Potable water is essential to their diversification efforts.

Total Estimated Project Cost $ 1584430

Signature Page

KENTUCKY
WATER
PROJECT PROFILE

1. **Project Title:**

"A" Interconnect Project 3 -10 Years

2. **Project Description:**

Provide a brief narrative denoting if project relates to source, distribution, treatment, storage or other)

Connect new East Pendleton Water District water main to new 12" main from NKWD and PCWD, provide back up supply connection. Connect mains on Ky 22 and Ky 330, additional loop and pump main for new water tank to serve underserved area and provide capability to serve others.

WRIS Project Number (PNUM): * WX21191402

*This number shall be assigned by the ADDs through the Area Water Management Planning Councils and will tie each project to mapped/spatial information in the Water Resource Information System (WRIS). Submitted projects without this number AND the appropriate mapped/spatial information will NOT be accepted. (WX_____)

Project County: PENDLETON

3. **Legal Applicant**

Applying Entity: Pendleton County Fiscal Court

Authorized Official Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2:

P.O. Box:

City: Falmouth State: KY Zip: 41040

County: Pendleton

Telephone: (859) 654-4321 Ext:

Fax: 859-654-5047

Email:

Contact Person Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2:

P.O. Box:

City: Falmouth State: KY Zip: 41040

County: Pendleton

Telephone: 859-654-4321 Ext:

Fax: 859-654-5047

Email:

Project Administrator Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2:

P.O. Box:

City: Falmouth State: Ky Zip: 41040

County: Pendleton

Telephone: 859-654-4321 Ext:

Fax: 859-654-5047

Email:

Consulting Engineer Information

First Name: Don Last Name: Willingham M.I.:

Firm: PDR

Street Address Line 1:

Street Address Line 2:

P.O. Box:

City: State: Zip:

County:

Telephone: 859-223-8000 Ext:

Fax:

Email:

If water project
PWSID#

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0020956
0030007

4. **Application:**

(•) New ( ) Revision

If revision, originally directed to: (agency)

5. **Project Type (check all that apply):**

- [ ] Planning
- [x] Design
- [x] Construction
- [ ] Management

6. **Project Alternatives: Please list a minimum of three:**

a. Construct new WTP.

b. Drill wells and WTP.

c. Connect to Bracken County.

7. Special Impact(s) of Proposed Water Project:

a. New service/improve service to 99 unserved 0 underserved households

b. Number of new jobs: 1 Number of retained jobs: 0

c. Other beneficial technical, managerial, fiscal impacts: (20 words or less)

System interconnection, looped sevice, delete existing pump station. Provides facilities to reach other unserved areas.

d. Rate impact/reasonableness of cost:

Without substantial grant, the water rates will increase.

e. If proposed extension of service to existing home is related to public health protection, please describe the source water quality and availability:

8. Median Household Income of Service Area:

$ 25000

9. Project Start Schedule:

○ Years 0-2 ◉ Years 3-10 ○ Years 11-20

10. Estimated Funding Sources:

TABLE 1: ESTIMATED FUNDING

	Total	DWSRF/ KIA-Fund F Amount Water	CDBG Amount	RD Amount	Other (name)	Other (name) Amount
0-2 Years	0	0	0	0		0

3-10 Years	3773000	1886500	980980	830060		75460
11-20 Years	0	0	0	0		0
TOTAL	3773000	1886500	980980	830060		75460

11. Project Data - Water (complete all items which apply to your project)

Source Protection

Acres 0

Cost ($acre) 0

Use control (r/c)

Drinking Water Facilities

a. Source (gpd)

Number of new surface/spring sources 0 Total GPD 0

Number of new wells 0 Total GPD 0

Elimination of Public Water Systems through Mergers

0 Systems serving 500 or fewer population

0 Systems serving 501-3,000 population

0 Systems serving 3,001-10,000 population

0 Systems serving 10,001 or greater population

Interconnections

0 Elimination of water treatment plants

1 Supplemental potable water supply

1 Emergency backup potable water supply

Source Water Quantity and Quality

☐ Replace existing raw water source

☐ Supplemental existing raw water source

Briefly describe why the above items apply to your project:

b. Water Treatment

Proposed design capacity 0 MGD (as a result of this project)

Project will involve expansion or modification of

Microbiology and Turbidity

☐ Pre-filtration

☐ Filtration

☐ Disinfection Process

Best Available Technologies

☐ VOCs ☐ IOCs ☐ SOCs ☐ Radionuclides

☐ Disinfectants ☐ Disinfection by-products

☐ Secondary contaminants

Briefly describe why the above items, if checked, apply to your project:

c. Water Distribution (Rehab/Improvements)

Proposed project involves construction of line

Total linear feet 125664

Line Size (in inches) ☐ 2 ☐ 3 ☑ 4 ☑ 6 ☑ 8 ☑ 10 ☑ greater than 10

Material ☐ Ductile Iron ☑ PVC ☐ PE Other

Project activity improves pressure, as a result of

Replacement of 25000 total linear feet of inadequately sized lines

250000 total gallons of increased storage: Required to overcome inadequate distribution storage

☐ Leaks, Breaks, or restrictive flows due to age

Project activity improves water quality by providing:

☐ Adequate turnover of water

☐ Proper maintenance of disinfection residual

Replacement of 0 total linear feet of lead, copper, asbestos-cement lines

Briefly describe why the above items apply to your project:

d. Management (describe)

e. Other (describe)

Total Estimated Project Cost $ 3773000

Signature Page

KENTUCKY
WATER
PROJECT PROFILE

1. Project Title:

"B" Backup and Major Loops Project 3-10 Yrs.

2. Project Description:

Provide a brief narrative denoting if project relates to source, distribution, treatment, storage or other)

Extend NKWD backup supply and provide potential interconnect and backup supply with Bullock Pen Water District in the West and Bracken County in the East. Create major loop mains in the NW Section of the County. Extend service to unserved areas. Extend main to "AA" Highway.

WRIS Project Number (PNUM): * WX21191403

*This number shall be assigned by the ADDs through the Area Water Management Planning Councils and will tie each project to mapped/spatial information in the Water Resource Information System (WRIS). Submitted projects without this number AND the appropriate mapped/spatial information will NOT be accepted. (WX_____)

Project County: PENDLETON

3. Legal Applicant

Applying Entity: Pendleton County Fiscal Court

Authorized Official Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2:

P.O. Box:

City: Falmouth State: KY Zip: 41040

County: Pendleton

Telephone: (859) 654-4321 Ext:

Fax: 859-654-5047

Email:

Contact Person Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2:

P.O. Box:

City: Falmouth State: Ky Zip: 41040

County: Pendleton

Telephone: 859-654-4321 Ext:

Fax: 859-654-5047

Email:

Project Administrator Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2:

P.O. Box:

City: Falmouth State: KY Zip: 41040

County: Pendleton

Telephone: 859-654-4321 Ext:

Fax: 859-654-5047

Email:

Consulting Engineer Information

First Name: Last Name: M.I.:

Firm: PDR Engineers

Street Address Line 1:

Street Address Line 2:

P.O. Box:

City: State: Zip:

County:

Telephone: 859-223-8000 Ext:

Fax:

Email:

If water project
PWSID#

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4. **Application:**

(•) New ( ) Revision

If revision, originally directed to: (agency)

5. **Project Type (check all that apply):**

- [ ] Planning
- [x] Design
- [x] Construction
- [ ] Management

6. **Project Alternatives: Please list a minimum of three:**

a. Construct new WTP.

b. Drill wells and WTP.

c. Connect to Bracken County

7. Special Impact(s) of Proposed Water Project:

a. New service/improve service to 247 unserved 0 underserved households

b. Number of new jobs: 1 Number of retained jobs: 0

c. Other beneficial technical, managerial, fiscal impacts: (20 words or less)

Extension of system interconnection, looped service. Provides faciities to reach other unserved areas.

d. Rate impact/reasonableness of cost:

Without substantial grant, the water rates will increase.

e. If proposed extension of service to existing home is related to public health protection, please describe the source water quality and availability:

8. Median Household Income of Service Area:

$ 25000

9. Project Start Schedule:

○ Years 0-2 ◉ Years 3-10 ○ Years 11-20

10. Estimated Funding Sources:

TABLE 1: ESTIMATED FUNDING

	Total	DWSRF/ KIA-Fund F Amount Water	CDBG Amount	RD Amount	Other (name)	Other (name) Amount
0-2 Years	0	0	0	0		0

3-10 Years	3008000	1504000	902400	511360		90240
11-20 Years	0	0	0	0		0
TOTAL	3008000	1504000	902400	511360		90240

11. Project Data - Water (complete all items which apply to your project)

Source Protection

Acres 0

Cost ($acre) 0

Use control (r/c)

Drinking Water Facilities

a. Source (gpd)

Number of new surface/spring sources 0 Total GPD 0

Number of new wells 0 Total GPD 0

Elimination of Public Water Systems through Mergers

0 Systems serving 500 or fewer population

0 Systems serving 501-3,000 population

0 Systems serving 3,001-10,000 population

0 Systems serving 10,001 or greater population

Interconnections

0 Elimination of water treatment plants

1 Supplemental potable water supply

1 Emergency backup potable water supply

Source Water Quantity and Quality

☐ Replace existing raw water source

☐ Supplemental existing raw water source

Briefly describe why the above items apply to your project:

b. Water Treatment

Proposed design capacity [0] MGD (as a result of this project)

Project will involve expansion or modification of

Microbiology and Turbidity

☐ Pre-filtration

☐ Filtration

☐ Disinfection Process

Best Available Technologies

☐ VOCs ☐ IOCs ☐ SOCs ☐ Radionuclides

☐ Disinfectants ☐ Disinfection by-products

☐ Secondary contaminants [ ]

Briefly describe why the above items, if checked, apply to your project:

[ ]

c. Water Distribution (Rehab/Improvements)

Proposed project involves construction of line

Total linear feet [182688]

Line Size (in inches) ☐ 2 ☐ 3 ☑ 4 ☑ 6 ☑ 8 ☑ 10 ☑ greater than 10

Material ☑ Ductile Iron ☑ PVC ☐ PE Other [ ]

Project activity improves pressure, as a result of

Replacement of [20000] total linear feet of inadequately sized lines

[0] total gallons of increased storage: Required to overcome inadequate distribution storage

☐ Leaks, Breaks, or restrictive flows due to age

Project activity improves water quality by providing:

☐ Adequate turnover of water

☐ Proper maintenance of disinfection residual

Replacement of [0] total linear feet of lead, copper, asbestos-cement lines

Briefly describe why the above items apply to your project:

[Extend interconnect with NKWD. Potentially underseved area.
Delete asbestos mains.]

d. Management (describe)

e. Other (describe)

Total Estimated Project Cost $ 3008000

Signature Page

KENTUCKY
WATER
PROJECT PROFILE

1. **Project Title:**

"C" Major Loops, New Customers - Project 11-20 Yrs

2. **Project Description:**

Provide a brief narrative denoting if project relates to source, distribution, treatment, storage or other)

Major pump loops, new customers extend NKWD backup supply and provide potential interconnect and backup supply with Bracken Co. in the East. Crate major loop mains in the NW Section of the County. Extend service to unserved areas.

WRIS Project Number (PNUM): * WX21191400

*This number shall be assigned by the ADDs through the Area Water Management Planning Councils and will tie each project to mapped/spatial information in the Water Resource Information System (WRIS). Submitted projects without this number AND the appropriate mapped/spatial information will NOT be accepted. (WX_____)

Project County: PENDLETON

3. **Legal Applicant**

Applying Entity: Pendleton County Fiscal Court

Authorized Official Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2: Pendleton County Courthouse

P.O. Box:

City: Falmouth State: KY Zip: 41040

County: Pendleton

Telephone: (859) 654-4321 Ext:

Fax: 859-654-5047

Email:

Contact Person Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2:

P.O. Box:

City: Falmouth State: Ky Zip: 41040

County: Pendleton

Telephone: 859-654-4321 Ext:

Fax: 859-654-5047

Email:

Project Administrator Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2:

P.O. Box:

City: Falmouth State: KY Zip: 41040

County: Pendleton

Telephone: 859-654-4321 Ext:

Fax: 859-654-5047

Email:

Consulting Engineer Information

First Name: Last Name: M.I.:

Firm: PDR Engineeers

Street Address Line 1:

Street Address Line 2:

P.O. Box:

City: State: Zip:

County:

Telephone: 859-223-8000 Ext:

Fax:

Email:

If water project
PWSID#

0010082
0010702
0020386
0020956
0030007

4. **Application:**

(•) New ( ) Revision

If revision, originally directed to: (agency)

5. **Project Type (check all that apply):**

- [ ] Planning
- [x] Design
- [x] Construction
- [ ] Management

6. **Project Alternatives: Please list a minimum of three:**

a. Construct new WTP.

b. Drill wells and WTP.

c. Connect to Bracken Co.

7. Special Impact(s) of Proposed Water Project:

a. New service/improve service to 221 unserved 0 underserved households

b. Number of new jobs: 0 Number of retained jobs: 0

c. Other beneficial technical, managerial, fiscal impacts: (20 words or less)

Extension of system interconnection, looped service. Provides facilities to reach other unserved areas.

d. Rate impact/reasonableness of cost:

Without subtantial grant, the water rates will increase.

e. If proposed extension of service to existing home is related to public health protection, please describe the source water quality and availability:

8. Median Household Income of Service Area:

$ 25000

9. Project Start Schedule:

○ Years 0-2 ◉ Years 3-10 ○ Years 11-20

10. Estimated Funding Sources:

TABLE 1: ESTIMATED FUNDING

	Total	DWSRF/ KIA-Fund F Amount Water	CDBG Amount	RD Amount	Other (name)	Other (name) Amount
0-2 Years	0	0	0	0		0

3-10 Years	2916000	1458000	874800	495720		87480
11-20 Years	0	0	0	0		0
TOTAL	2916000	1458000	874800	495720		87480

11. Project Data - Water (complete all items which apply to your project)

Source Protection

Acres 0

Cost ($acre) 0

Use control (r/c)

Drinking Water Facilities

a. Source (gpd)

Number of new surface/spring sources 0 Total GPD 0

Number of new wells 0 Total GPD 0

Elimination of Public Water Systems through Mergers

0 Systems serving 500 or fewer population

0 Systems serving 501-3,000 population

0 Systems serving 3,001-10,000 population

0 Systems serving 10,001 or greater population

Interconnections

0 Elimination of water treatment plants

1 Supplemental potable water supply

1 Emergency backup potable water supply

Source Water Quantity and Quality

☐ Replace existing raw water source

☐ Supplemental existing raw water source

Briefly describe why the above items apply to your project:

b. Water Treatment

Proposed design capacity [0] MGD (as a result of this project)

Project will involve expansion or modification of

Microbiology and Turbidity

☐ Pre-filtration

☐ Filtration

☐ Disinfection Process

Best Available Technologies

☐ VOCs ☐ IOCs ☐ SOCs ☐ Radionuclides

☐ Disinfectants ☐ Disinfection by-products

☐ Secondary contaminants [ ]

Briefly describe why the above items, if checked, apply to your project:

[ ]

c. **Water Distribution (Rehab/Improvements)**

Proposed project involves construction of line

Total linear feet [182688]

Line Size (in inches) ☐ 2 ☐ 3 ☑ 4 ☑ 6 ☑ 8 ☐ 10 ☐ greater than 10

Material ☑ Ductile Iron ☑ PVC ☐ PE Other [ ]

Project activity improves pressure, as a result of

Replacement of [0] total linear feet of inadequately sized lines

[0] total gallons of increased storage: Required to overcome inadequate distribution storage

☐ Leaks, Breaks, or restrictive flows due to age

Project activity improves water quality by providing:

☐ Adequate turnover of water

☐ Proper maintenance of disinfection residual

Replacement of [0] total linear feet of lead, copper, asbestos-cement lines

Briefly describe why the above items apply to your project:

[Extend interconnect with NKWD. Serve 221 new households that do not currently have water available.]

d. Management (describe)

e. Other (describe)

Total Estimated Project Cost $ 2916000

Signature Page

KENTUCKY
WATER
PROJECT PROFILE

1. **Project Title:**

"D" New Customers, Ext. to "AA" Hwy - Pro. 11-20 Y

2. **Project Description:**

Provide a brief narrative denoting if project relates to source, distribution, treatment, storage or other)

New customers, extend service to "AA" Highway.

WRIS Project Number (PNUM): * WX21191401

*This number shall be assigned by the ADDs through the Area Water Management Planning Councils and will tie each project to mapped/spatial information in the Water Resource Information System (WRIS). Submitted projects without this number AND the appropriate mapped/spatial information will NOT be accepted. (WX_____)

Project County: PENDLETON

3. **Legal Applicant**

Applying Entity: Pendleton County Fiscal Court

Authorized Official Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2:

P.O. Box:

City: Falmouth State: KY Zip: 41040

County: Pendleton

Telephone: (859) 654-4321 Ext:

Fax: 859-654-5047

Email:

Contact Person Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2:

P.O. Box:

City: Falmouth State: Ky Zip: 41040

County: Pendleton

Telephone: 859-654-4321 Ext:

Fax: 859-654-5047

Email:

Project Administrator Information

First Name: Henry Last Name: Bertram M.I.:

Title: Judge/Executive

Street Address Line 1: Pendleton County Courthouse

Street Address Line 2:

P.O. Box:

City: Falmouth State: Ky Zip: 41040

County: Pendleton

Telephone: 859-654-4321 Ext:

Fax: 859-654-5047

Email:

Consulting Engineer Information

First Name: Last Name: M.I.:

Firm: PDR Engineers

Street Address Line 1:

Street Address Line 2:

P.O. Box:

City: State: Zip:

County:

Telephone: 859-223-8000 Ext:

Fax:

Email:

If water project
PWSID#

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4. **Application:**

(•) New ( ) Revision

If revision, originally directed to: (agency)

5. **Project Type (check all that apply):**

- [ ] Planning
- [x] Design
- [x] Construction
- [ ] Management

6. **Project Alternatives: Please list a minimum of three:**

a. Construct new WTP

b. Drill wells and WTP

c. Connect to Bracken Co.

7. Special Impact(s) of Proposed Water Project:

a. New service/improve service to 128 unserved 0 underserved households

b. Number of new jobs: 2 Number of retained jobs: 0

c. Other beneficial technical, managerial, fiscal impacts: (20 words or less)

Extension of system interconnection, looped service. Provides facilities to reach other unserved areas.

d. Rate impact/reasonableness of cost:

Without substantial grant, the water rates will increase.

e. If proposed extension of service to existing home is related to public health protection, please describe the source water quality and availability:

8. Median Household Income of Service Area:

$ 25000

9. Project Start Schedule:

○ Years 0-2 ◉ Years 3-10 ○ Years 11-20

10. Estimated Funding Sources:

TABLE 1: ESTIMATED FUNDING

	Total	DWSRF/ KIA-Fund F Amount Water	CDBG Amount	RD Amount	Other (name)	Other (name) Amount
0-2 Years	0	0	0	0		0

3-10 Years	1182000	591000	354600	200940		35460
11-20 Years	0	0	0	0		0
TOTAL	1182000	591000	354600	200940		35460

11. Project Data - Water (complete all items which apply to your project)

Source Protection

Acres 0

Cost ($acre) 0

Use control (r/c)

Drinking Water Facilities

a. Source (gpd)

Number of new surface/spring sources 0 Total GPD 0

Number of new wells 0 Total GPD 0

Elimination of Public Water Systems through Mergers

0 Systems serving 500 or fewer population

0 Systems serving 501-3,000 population

0 Systems serving 3,001-10,000 population

0 Systems serving 10,001 or greater population

Interconnections

0 Elimination of water treatment plants

1 Supplemental potable water supply

1 Emergency backup potable water supply

Source Water Quantity and Quality

☐ Replace existing raw water source

☐ Supplemental existing raw water source

Briefly describe why the above items apply to your project:

b. Water Treatment

Proposed design capacity [0] MGD (as a result of this project)

Project will involve expansion or modification of

Microbiology and Turbidity

☐ Pre-filtration

☐ Filtration

☐ Disinfection Process

Best Available Technologies

☐ VOCs ☐ IOCs ☐ SOCs ☐ Radionuclides

☐ Disinfectants ☐ Disinfection by-products

☐ Secondary contaminants [ ]

Briefly describe why the above items, if checked, apply to your project:

[ ]

c. **Water Distribution (Rehab/Improvements)**

Proposed project involves construction of line

Total linear feet [119856]

Line Size (in inches) ☐ 2 ☐ 3 ☑ 4 ☑ 6 ☐ 8 ☐ 10 ☐ greater than 10

Material ☑ Ductile Iron ☑ PVC ☐ PE Other [ ]

Project activity improves pressure, as a result of

Replacement of [0] total linear feet of inadequately sized lines

[0] total gallons of increased storage: Required to overcome inadequate distribution storage

☐ Leaks, Breaks, or restrictive flows due to age

Project activity improves water quality by providing:

☐ Adequate turnover of water

☐ Proper maintenance of disinfection residual

Replacement of [0] total linear feet of lead, copper, asbestos-cement lines

Briefly describe why the above items apply to your project:

[Extend to "AA" Highway. Serve 128 households that do not currently have water available.]

d. Management (describe)

e. Other (describe)

Total Estimated Project Cost $ 1182000

Signature Page

CHAPTER 15
PLAN APPROVALS

Council Members

Judge/Executive Henry W. Bertram
Pendleton County Fiscal Court
Planning Council Chair

Roscoe Antrobus
East Pendleton County Water District

Wayne Biddle
Pendleton County Health Department

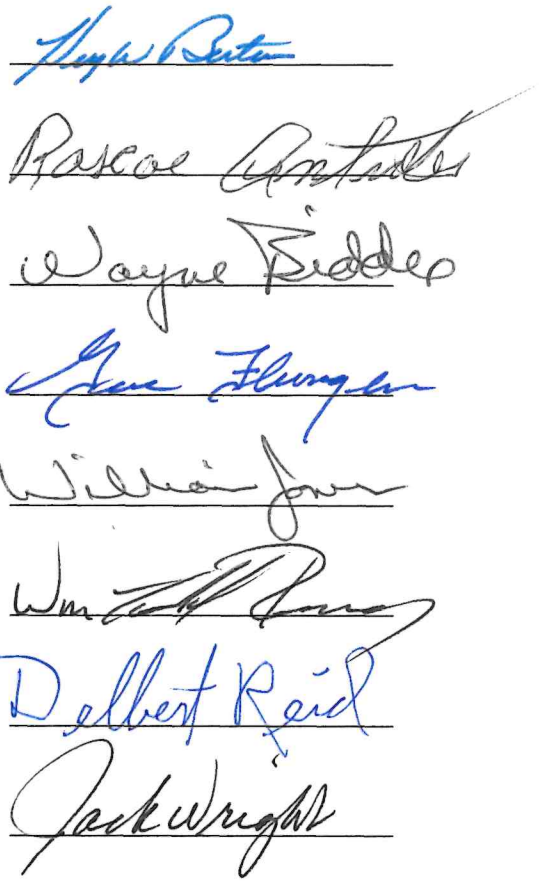
Mayor Gene Flaugher
City of Falmouth

William Jones
Pendleton County Water District

W. Todd Ramsey
City of Falmouth

Mayor Delbert Reid
City of Butler

Jack Wright
Pendleton County Industrial Authority



A missing signature indicates that the member became a non-participant during the planning process.

Appendix A: Minutes

Pendleton County Water Supply Planning Council

February 25, 2002

In Attendance:

William Jones, Pendleton County Water District
Roscoe Antrobus, East Pendleton County Water District
Judge/Executive Henry W. Bertram, Pendleton County Fiscal Court
Jack Wright, Pendleton County Industrial Authority
Mayor Gene Flaugher, City of Falmouth
Don Willingham, PDR Engineers, Inc.
Cheri Wright, Pendleton County Water District
Bill Mitchell, Pendleton County
Stacey Dietrich, NKADD

The meeting began at approximately 9:30 a.m. at the Pendleton County Water District office.

Judge Bertram started the meeting with introductions. Stacey Dietrich from NKADD is the new water planning coordinator. She is taking over for Bill Mitchell, who now works with Pendleton County full-time.

Judge Bertram mentioned to the council that with the new 2020 project profiles and the Division of Water requirements that is may be easiest to update/revise the water supply plan prior to the required update. The other council member agreed. Judge Bertram suggested the council go through the plan page by page to see what needed to be updated. The next two hours was spent going over the plan and making the appropriate changes since the last revision. William Jones was asked to contact Bullock Pen Water District for changes in their information.

The next meeting was scheduled for Monday, March 25, 2002 at 9:30 a.m. at the Industrial Authority office. The meeting adjourned at approximately 11:30 a.m..

Pendleton County Water Supply Planning Council

March 25, 2002

In Attendance:

Judge/Executive Henry W. Bertram, Pendleton County Fiscal Court
William Jones, Pendleton County Water District
Roscoe Antrobus, East Pendleton County Water District
Jack Wright, Pendleton County Industrial Authority
Mayor Gene Flaugher, City of Falmouth
Wayne Biddle, Pendleton County Health Department
Mayor Delbert Reid, City of Butler
Todd Ramsey, City of Falmouth
Bill Mitchell, Pendleton County
Stacey Dietrich, NKADD

The meeting began at approximately 9:30 a.m. at the Pendleton County Industrial Authority office.

Judge Bertram called the meeting to order. The first draft of the revised water plan was handed out to the council. We went through the draft page by page looking for any mistakes or additions that needed to be made.
Judge Bertram asked that the new county map be included in the plan. Jeff Burt, of the ADD, is working on this.
The council asked Stacey to check the population projection numbers with the University of Louisville web site.
The base year of the water forecast section needed to be changed to 2000. Also, the council decided to add a chapter in order to include the project profiles submitted to the Kentucky Infrastructure Authority for the 2020 projects.

The council was satisfied with the progress of the revision and a public hearing to hear comments on the water supply plan revisions was scheduled for May 8, 2002.

The meeting was adjourned approximately 11:00 a.m..

Pendleton County Water Supply Planning Council

May 8, 2002

In Attendance:

Judge/Executive Henry W. Bertram, Pendleton County Fiscal Court
William Jones, Pendleton County Water District
Roscoe Antrobus, East Pendleton County Water District
Bill Mitchell, Pendleton County
Stacey Dietrich, NKADD
Janice Bertram

The meeting began at approximately 7:00 p.m. at the Pendleton County Courthouse Community Room.

Judge Bertram called the meeting to order at 7:05 p.m. for the public hearing. No members of the public were in attendance.
At 7:15 p.m. the public hearing was closed with no comments from the public.

Since there was not a quorum present from the council it was decided that a meeting would be called on May 16, 2002 at the Pendleton County Industrial Authority to approve the revisions.

The meeting adjourned at 7:30 p.m..

Pendleton County Water Supply Planning Council

May 16, 2002

In Attendance:

Judge/Executive Henry W. Bertram, Pendleton County Fiscal Court
William Jones, Pendleton County Water District
Jack Wright, Pendleton County Industrial Authority
Mayor Gene Flaugher, City of Falmouth
Todd Ramsey, City of Falmouth
Wayne Biddle, Pendleton County Health Department
Stacey Dietrich, NKADD

The meeting began at approximately 10:00 a.m. at the Pendleton County Industrial Authority office.

Judge Bertram called the meeting to order. Judge Bertram mentioned that a public hearing was held on the Water Plan revision on May 8, 2002 at the County Courthouse. No member of the public attended so therefore there were no comments.
The reason for this meeting was to approve the revisions to the Pendleton County Water Supply Plan.
Todd Ramsey suggested the Falmouth water use forecast for residential and non-residential use was switched around and the residential use should be the higher usage. No other changes were suggested. Mayor Flaugher called for the approval of the revisions; William Jones seconded the motion. The motion passed unanimously.
The Judge requested a disk copy of the revisions as well as the paper copy.

The meeting adjourned at 10:25 a.m..

APPENDIX B
NOTIFICATIONS

Notifications to Adjacent Counties
Revised February 25, 2002.

Judge/Executive Steven Pendery, Campbell County
Mayor Daniel McGinley, City of Alexandria
Mayor Thomas Wiethorn, City of Bellevue
Mayor Franklin Smith, City of California
Mayor Paul Weghorn Jr., City of Cold Spring
Mayor Michael Leopold, City of Crestview
Mayor Ron Gunnin, City of Dayton
Mayor Mary Brown, City of Fort Thomas
Mayor Charles Roettger III, City of Highland Heights
Mayor George Koopman, City of Melbourne
Mayor Matt Franck Jr., City of Mentor
Mayor Thomas Guidugli, City of Newport
Mayor Carl Schwarber, City of Silver Grove
Mayor Charles Melville, City of Southgate
Mayor Harold Knight, City of Wilder
Mayor John Haun, City of Woodlawn
Judge/Executive Darrell Link, Grant County
Mayor William Hill, City of Corinth
Mayor Martha Hicks, City of Crittenden
Mayor William Cull, City of Dry Ridge
Mayor Glenn Caldwell, City of Williamstown
Judge/Executive Richard Murgatroyd, Kenton County
Mayor James Miller, City of Bromley
Mayor Irvin Callery, City of Covington
Mayor Claire Moriconi, City of Crescent Springs
Mayor Paul Meier, City of Crestview Hills
Mayor John Link, City of Edgewood
Mayor Billy Bradford, City of Elsmere
Mayor Marc Otto Sr., City of Erlanger
Mayor Harold Parks, City of Fairview
Mayor Thomas Holocher, City of Fort Mitchell
Mayor Gene Weaver, City of Fort Wright
Mayor Tom Kriege, City of Independence
Mayor Michael Pendery, City of Kenton Vale
Mayor Frank Smith, City of Lakeside Park
Mayor Bridget Palzel, City of Latonia Lakes
Mayor Thomas Stacy, City of Ludlow
Mayor Michael Hellman, City of Park Hills
Mayor Bob Miller, City of Ryland Heights
Mayor Mark Kreimborg, City of Taylor Mill

Mayor Michael Sadouskas, City of Villa Hills
Richard Harrison, Northern Kentucky Water District
David Dezeeuw, Newport Water Works
Gordon Taylor, Williamstown Municipal Water
Mayor of Brooksville
Judge/Executive "Pie" Jett, Bracken County
Judge/Executive Charles Swinford, Harrison County
Mayor Berry, City of Cynthiana
James Poynter, Cynthiana Municipal Water Works

Notification to Local Governments and Water Suppliers in the Planning Unit

Judge/Executive Henry Bertram
Todd Ramsey, City of Falmouth
Mayor Delbert Reid, City of Butler
William Catlett, Bullock Pen Water District

Appendix C: Workplan

Appendix D: Survey

Appendix E: Soil Map

Appendix F: Obstacles to the Planning Process

Appendix G: Paying for the Planning Process

Appendix H: Solid Waste Ordinance