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JUN 5 2017
PUBLIC SERVICE COMMISSION

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

AIRVIEW UTILITIES, LLC'S NOTICE OF SURRENDER AND ABANDONMENT OF UTILITY PROPERTY

CASE NO. 2016-00207

NOTICE OF FILING OF AIRVIEW UTILITIES, LLC

Comes Airview Utilities, LLC ("Airview"), by counsel, and hereby files with the Public Service Commission a copy of a letter from Deborah L. Shaw, City Attorney for the City of Elizabethtown, Kentucky, dated March 27, 2017, with the portions of the Elizabethtown Perimeter Sewer Study dated October 2012 that relate to connection of the collection system serving Airview Estates to the sanitary sewer system serving the City of Elizabethtown, Kentucky. The Elizabethtown Perimeter Sewer Study was prepared by Strand Associates, Inc., and stamped by Mark Sneve, a professional engineer licensed by the State of Kentucky. Figure 4.02-1 reflects the proposed 175 gallons per minute pump station and the proposed 4" force main needed to connect the collection system serving Airview Estates to the City of Elizabethtown sanitary sewer system. The last page of this document indicates that the estimated cost to complete this work is $249,000.00.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing of document was served by electronic mail, on this June 5, 2017, upon:

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ELIZABETHTOWN, KENTUCKY
STRONG & GROWING SINCE 1779

CITY OF ELIZABETHTOWN

March 27, 2017

Robert C. Moore
Stites & Harbison
421 West Main Street
Frankfort, KY 40601

RE: Airview Utilities, LLC

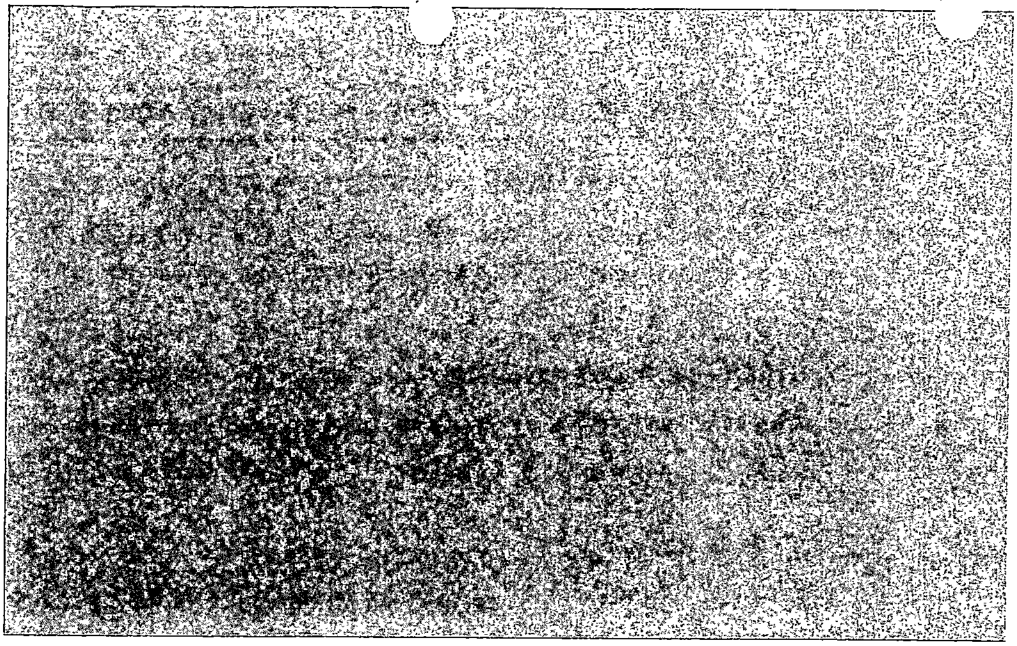
Dear Mr. Moore:

This letter is in reference to your request for information regarding a copy of the Elizabethtown Perimeter Study prepared for Hardin County Water District No. 2 and the City of Elizabethtown by Strand Associates, Inc. Enclosed is a copy of the Perimeter Sewer Study pertaining to Airview Utilities connecting to Elizabethtown Sanitary Sewer System.

If you need additional information, please feel free to contact me.

Sincerely,

Deborah L. Shaw
City Attorney



Elizabethtown Perimeter Sewer Study

Report

Hardin County Water District No. 2 and City of Elizabethtown, KY

October 2012

Report for

Hardin County Water District No. 2 (HCWD2) and City of Elizabethtown, Kentucky

Elizabethtown Perimeter Sewer Study

STATE OF KENTUCKY
MARK A.
SNEVE
18511
LICENSED
PROFESSIONAL ENGINEER

12/20/12

Prepared by:

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October 2012

STRAND
ASSOCIATES®

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1.01 INTRODUCTION AND BACKGROUND

The City of Elizabethtown (City) established a future sewer service area as part of the development of its 2007 Wastewater Facilities Plan Update. The Hardin County Water District No. 2 (HCWD2) currently provides water service to much of this same area hereinafter called the study area. HCWD2 and the City jointly hired Strand Associates, Inc.® (Strand) to complete an analysis of the territory within the study area that is not currently served with wastewater services by the City.

1.02 PURPOSE AND SCOPE OF REPORT

The purpose of this report is to determine the most cost-effective way to provide sewer service to the study area. This report documents the study undertaken by Strand. The scope of the study includes:

- A delineation of the unserved area into watersheds/sewersheds hereinafter called watersheds.
- Flow and load projections for each watershed.
- A nonmonetary ranking of the watersheds.
- A list of possible wastewater collection methods for existing developments and their feasibility for use in the watersheds.
- Recommended infrastructure for the top five watersheds based on nonmonetary ranking.
- List of approaches for transitioning infrastructure from HCWD2 to the City if the City annexes areas where HCWD2 has constructed wastewater infrastructure.

Watershed protection areas and recharge areas were considered during this study. Figure 1.02-1 shows the watershed protection and recharge areas within the study area along with the existing sewers and wastewater treatment facilities.

2.01 INTRODUCTION

This section describes how the study area was evaluated. The study area was divided into 14 watersheds based on topography, the City limits, and the City of Elizabethtown 2007 Facilities Plan Study Area. Figure 2.01-1 shows the study area watersheds. Study area 13 was later subdivided into Area 13A and 13B based on the likelihood for initial development in Area 13A.

2.02 FLOW AND WASTE LOAD PROJECTIONS

A. Existing Average Daily Flows

Existing average daily wastewater flows from established residences were estimated using individual water meter readings within each watershed provided by HDWD2. Table 2.02-1 provides estimations of existing average daily flows for each watershed.

B. Projected Future Average Daily Flows

Projected wastewater flows were obtained by determining what land areas within each watershed were suitable for future development by excluding those lands not suitable for such development. For the purpose of projecting future flows, parcels excluded from future flow projections included:

1. Parcels smaller than 5 acres
2. Land within the 100-year floodplain
3. Transportation corridors
4. Parks
5. Golf courses
6. Conservation areas
7. Established subdivisions
8. Wetlands

Future average daily flows were projected by considering both developable land and existing residences. Figure 2.02-1 shows the areas considered suitable for future development within the study area. The results of the suitability analysis are shown in Table 2.02-2. Table 2.02-1 provides information on the projected average daily flows for each watershed from proposed future developable land. Future developable land flow projections assumed 60 percent of the developable land would be developed as currently zoned. The net flow per acre varied from 1,000 gallons per day (gpd) to 2,000 gpd depending on the current zoning.

C. Projected Future Peak Flows

Projected peak flows for present, 20-year, and ultimate build-out conditions were then developed (see Table 2.02-3). After discussions with HCWD2 and City personnel, the 20-year peak projected flows of some watersheds were estimated using a 50-year build-out because of potential for development. Projected flows for areas without significant potential for development were estimated using a 100-year build-out.

TABLE 2.02-1

EXISTING AND PROJECTED AVERAGE DAILY WASTEWATER FLOWS

Watershed ID	Service Area	Existing Flow (gal/day)	Potential Development Flow (Build-out) (gal/day)	Total Potential Flow (Build-out) (gal/day)
1	Mill Creek	45,600	126,900	172,500
2	Freeman Creek	29,700	171,200	200,900
3	Buffalo Creek 1	27,400	386,600	414,000
4	Buffalo Creek 2	95,900	335,900	431,800
5	Wheeler Branch	17,200	767,600	784,800
6	Cole Creek	56,600	1,746,300	1,802,900
7	Valley Creek 1	16,800	162,700	179,500
8	Middle Creek	64,400	272,600	337,000
9	East Rhudes Creek 1	114,000	1,428,300	1,542,300
10	Valley Creek 2	83,600	1,928,600	2,012,200
11	West Rhudes Creek 1	85,100	1,788,100	1,873,200
12	West Rhudes Creek 2	10,200	1,339,400	1,349,600
13A	Billy Creek 1	31,000	740,900	771,900
13B	Billy Creek 2	29,200	1,298,300	1,327,500
14	Upper Shaw Creek	26,900	101,700	128,600
	Total	**733,600**	**12,595,100**	**13,328,700**

TABLE 2.02-2

VACANT LAND SUITABLE FOR DEVELOPMENT

Watershed ID	Service Area	Vacant Land Suitable for Development (Acres)	Vacant Land Unsuitable for Development (Acres)	Total Area (Acres)
1	Mill Creek	176	434	610
2	Freeman Creek	238	525	762
3	Buffalo Creek 1	537	538	1,075
4	Buffalo Creek 2	467	718	1,184
5	Wheeler Branch	1,065	455	1,520
6	Cole Creek	2,444	1,607	4,051
7	Valley Creek 1	226	308	533
8	Middle Creek	379	1,321	1,700
9	East Rhudes Creek 1	1,967	3,536	5,503
10	Valley Creek 2	2,792	3,058	5,850
11	West Rhudes Creek 1	2,470	1,600	4,070
12	West Rhudes Creek 2	1,860	783	2,643
13A	Billy Creek 1	1,029	1,355	2,384
13B	Billy Creek 2	1,803	1,147	2,950
14	Upper Shaw Creek	141	289	431
	Total	**17,594**	**17,673**	**35,267**

TABLE 2.02-3

PEAK HOURLY FLOWS FOR WATERSHEDS DRAINING INTO ELIZABETHTOWN'S SYSTEM

Watershed ID	Service Area	Build-Out Horizon (Years)	Peak Hourly Flow (gallons per minute)		
			Existing	20-year	Ultimate
1	Mill Creek	50	180	250	440
2	Freeman Creek	50	84	259	500
3	Buffalo Creek 1	100	78	275	954
4	Buffalo Creek 2	50	254	482	798
5	Wheeler Branch	100	50	431	1,667
6	Cole Creek	100	155	938	3,378
7	Valley Creek 1	100	49	136	451
8	Middle Creek	100	315	310	800
9	East Rhudes Creek 1	100	315	930	2,970
10	Valley Creek 2	100	223	1,066	3,703
11	West Rhudes Creek 1	100	315	1,020	3,490
12	West Rhudes Creek 2	100	30	670	2,647
13A	Billy Creek 1	50	88	775	1,643
13B	Billy Creek 2	100	83	693	2,610
14	Upper Shaw Creek	50	77	183	333
		Total	**2,295**	**8,420**	**26,385**

Watershed 13 was further divided into 13A and 13B because of higher potential for development in watershed 13A. Table 2.02-3 shows the projected peak hourly flow for each watershed based on the assumed build-out horizon.

D. Projected Future Waste Loads

For the purposes of this study, the wastewater characteristics (carbonaceous biochemical oxygen demand [$CBOD_5$], total suspended solids [TSS], total Kjeldahl nitrogen [TKN], and phosphorus) were assumed to be typical of domestic strength wastewater. Table 2.02-4 summarizes the assumed concentrations with septic tanks remaining in service while Table 2.02-5 summarizes the assumed concentrations without septic tanks remaining in service. Table 2.02-6 shows the projected waste loads for each watershed with and without septic tanks remaining in use.

Parameters	Concentration (mg/L)
$CBOD_5$	140
TSS	100
TKN	40
Phosphorus	6

Table 2.02-4 Projected Wastewater Characteristics With Septic Systems Remaining in Use

Parameters	Concentration (mg/L)
$CBOD_5$	225
TSS	250
TKN	30
Phosphorus	7

Table 2.02-5 Projected Wastewater Characteristics Without Septic Systems Remaining in Use

Table 2.02-6 shows the projected waste loads for each watershed with septic tanks remaining in use. Table 2.02-7 shows the projected waste loads with septic tanks eliminated.

2.03 NONMONETARY RANKINGS

Table 2.03-1 is a summary of the watershed rankings based on nonmonetary factors. Ranking criteria include:

1. Lincoln Trail Health Department (LTHD) concerns.
2. Development potential/likelihood.
3. City of Elizabethtown ability to accept flows from the watershed.
4. Groundwater protection.
5. Interest in sewer service expressed by existing homeowners.
6. Engineering judgment on practicability.

This table was developed after consultation with the LTHD, the City, and HCWD2. Figure 2.03-1 shows the areas within the study area with LTHD concerns. Watersheds where the City's current infrastructure could not accept flows based on 20-year peak hourly flows projections were not evaluated further in this study.

TABLE 2.02-6

PROJECTED WASTE LOADS WITH SEPTIC TANKS REMAINING IN USE

Watershed ID	Service Area	Parameter			
		$CBOD_5$ (lbs/d)	TSS (lbs/d)	TKN (lbs/d)	Phosphorus (lbs/d)
1	Mill Creek	201	144	58	9
2	Freeman Creek	235	168	67	10
3	Buffalo Creek 1	483	345	138	21
4	Buffalo Creek 2	504	360	144	22
5	Wheeler Branch	916	655	262	39
6	Cole Creek	2,105	1,504	601	90
7	Valley Creek 1	210	150	60	9
8	Middle Creek	393	281	112	17
9	East Rhudes Creek 1	1,801	1,286	515	77
10	Valley Creek 2	2,349	1,678	671	101
11	West Rhudes Creek 1	2,187	1,562	625	94
12	West Rhudes Creek 2	1,576	1,126	450	68
13A	Billy Creek 1	901	644	258	39
13B	Billy Creek 2	1,550	1,107	443	66
14	Upper Shaw Creek	150	107	43	6
	Total	**15,563**	**11,116**	**4,446**	**667**

TABLE 2.02-7

PROJECTED WASTE LOADS WITH SEPTIC TANKS ELIMINATED

Watershed ID	Service Area	Parameter			
		$CBOD_5$ (bs/d)	TSS (lbs/d)	TKN (lbs/d)	Phosphorus (lbs/d)
1	Mill Creek	324	360	43	10
2	Freeman Creek	377	419	50	12
3	Buffalo Creek 1	777	863	104	24
4	Buffalo Creek 2	810	900	108	25
5	Wheeler Branch	1,473	1,636	196	46
6	Cole Creek	3,383	3,759	451	105
7	Valley Creek 1	337	374	45	10
8	Middle Creek	632	703	84	20
9	East Rhudes Creek 1	2,894	3,216	386	90
10	Valley Creek 2	3,776	4,195	503	117
11	West Rhudes Creek 1	3,515	3,906	469	109
12	West Rhudes Creek 2	2,533	2,814	338	79
13A	Billy Creek 1	1,448	1,609	193	45
13B	Billy Creek 2	2,491	2,768	332	77
14	Upper Shaw Creek	241	268	32	8
	Total	**25,011**	**27,790**	**3,335**	**778**

TABLE 2.03-1

SUMMARY OF NONMONETARY FACTORS FOR WATERSHEDS

		Ranking Among Factors (0 to 100%)							
		20%	5%	40%	5%	10%	20%		100%
Shapefile ID	Service Area	Lincoln Trail Health Department Concerns	Development Potential	Elizabethtown Ability to Accept(1)	Groundwater Protection	Interest by Existing Homeowners	Engineering Judgment on Practicability	Nonmonetary Ranking(2)	Rank
1	Mill Creek	High	High	Medium	Medium	High	High	2.55	3rd
2	Freeman Creek	High	High	High	High	Medium	High	2.9	1st
3	Buffalo Creek 1	Medium	Medium	Medium	High	Low	High	2.15	10th
4	Buffalo Creek 2	High	High	High	High	Low	High	2.8	2nd
5	Wheeler Branch	Low	Low	None	High	Low	Medium	0.9	15th
6	Cole Creek	Low	Low	Medium	High	Low	Low	1.5	12th
7	Valley Creek 1	High	Medium	Medium	High	Low	High	2.35	6th
8	Middle Creek	High	Medium	None	Low	Medium	Medium	1.35	13th
9	East Rhudes Creek 1	Medium	Medium	High	Low	Low	Medium	2.25	8th
10	Valley Creek 2	Medium	Medium	High	Medium	Medium	Medium	2.4	5th
11	West Rhudes Creek 1	Medium	Medium	High	Low	Medium	Medium	2.35	6th
12	West Rhudes Creek 2	Low	Medium	Low	Low	Low	Medium	1.25	14th
13A	Billy Creek 1	Low	High	High	High	Low	Medium	2.2	9th
13B	Billy Creek 2	Low	Low	High	High	Low	Medium	2.1	11th
14	Upper Shaw Creek	Medium	Medium	High	High	Low	High	2.55	3rd

(1) If "None", area will not be selected for further evaluation in this study.
(2) Ranking determined by assigning 3 for High, 2 for Medium, and 1 for Low.

2.04 SELECTED AREAS FOR FURTHER STUDIES

After the nonmonetary evaluation, the following five watersheds were selected for more comprehensive study:

1. Mill Creek Service Area (Watershed 1).
2. Freeman Creek Service Area (Watershed 2).
3. Buffalo Creek 2 Service Area (Watershed 4).
4. Valley Creek 2 Service Area (Watershed 10).
5. Upper Shaw Creek Service Area (Watershed 14).

The remaining watersheds are considered a lower priority and can be studied in more detail at a later date.

3.01 INTRODUCTION

Most of the unserved areas already have on-site treatment systems but are having maintenance issues because of various reasons. This section evaluates alternative collection sewers that may be used to address sewer collection in the study areas and convey flow to the City's wastewater collection system. The City has a wastewater treatment plant that provides treatment to influent wastewater before it is discharged to Valley Creek. See Figure 2.02-1

3.02 WASTEWATER COLLECTION SYSTEM ALTERNATIVES

Table 3.02-1 provides a list of available wastewater collection system alternatives. HCWD2 and City personnel expressed a strong desire for conventional gravity sewers to be used for the study areas since alternative collection systems present challenges (odors and corrosion) when they are discharged into the City's conventional gravity sewers. As a result, conventional gravity sewers and regional pump stations were selected for most of the study areas and evaluated in detail.

TABLE 3.02-1

AVAILABLE WASTEWATER COLLECTION SYSTEM ALTERNATIVES

	Collection Systems					Conveyance Systems				
	Options with Septic Tank(s)			Options without Septic Tank(s)		Regional Pumping Station Options			Force Mains Options	
	Septic System Tanks	Small Diameter Gravity Sewers (SDGS)	Septic Tank Effluent Pumping (STEP)	Gravity Sewers (GRS)	Grinder Pumps/Pressure Sewers (GPPS)	Submersible Pumps	Suction Lift Pumps	Dry Pit Pumps	Small Diameter (<4 inches)	Large Diameter (>4 inches)
Description/Benefits	Serves as a holding tank to pretreat wastewater before conveyance.	Conveys septic tank effluent by gravity to a collection system, pump station, or treatment facility.	Provides pumping pressure to convey septic tank effluent to a gravity discharge manhole, pump station, or treatment facility.	Conveys wastewater by gravity through a series of manholes to a pump station or treatment facility.	Grind solids and provides pumping pressure to convey wastewater to a gravity discharge manhole, pump station, or treatment facility.	Provides pumping pressure to convey wastewater from a collection system (i.e., SDGS, STEP, GRS, and GPPS) to a gravity discharge manhole, pump station, or treatment facility.			Conveys wastewater under pressure to a gravity discharge manhole, pump station, or treatment facility.	
Advantages	Relatively inexpensive and easy installation; ideally suited for decentralized treatment processes. Final treatment requirements are less because of organics removal in septic tanks.	Allows conveyance in areas of hilly or flat terrain without deep excavation; reduced infiltration.	Allows conveyance in areas of hilly or flat terrain without deep excavation; capable of serving clusters of houses; reduced infiltration.	Easily connected to traditional wastewater systems; capable of conveying grit and solids. Minimum velocities reduce production of hydrogen sulfide and methane.	Allows conveyance in areas of hilly or flat terrain without deep excavation; capable of serving clusters of houses; reduced infiltration.	More cost-effective and requires less space than dry pit stations; operates without frequent maintenance.	Relatively convenient maintenance compared to submersible stations.		Allows conveyance in areas of hilly or flat terrain without deep excavation; maintains high velocities for self-cleansing.	Allows conveyance in areas of hilly or flat terrain without deep excavation; additional capacity for future growth; allows use of nongravity pumps.
Disadvantages	Periodic pumping and disposal of septage are necessary to prevent solids in sewers (frequency dependent on tank capacity, wastewater flow, and magnitude of solids). Tank effluent has anaerobic odor potential.	Capable of constricting future growth with smaller transport capacity; cannot handle commercial effluent with high grit or settleable solids levels.	Pumps require additional maintenance; power outages can result in overflows if standby generators are not available.	Deep excavations related to gravity slope requirements can increase initial costs. Pump stations may be required; manholes are a source of infiltration.	Pumps require additional maintenance; power outages can result in overflows if standby generators are not available.	Typically requires an additional vault for gate and check valve assembly	Requires large aboveground structure; more motor noise than submersible stations.	Requires separate dry well in addition to wet well structure.	Capable of constricting future growth with smaller transport capacity; requires grinder pump.	
Useful Life Expectancy	20 to 40 years	75 to 100 years	Pipe: 20 to 50 years Pump: 5 to 15 years	50 to 100 years	Pipe: 20 to 50 years Pump: 5 to 15 years	Pumps: 15 to 20 years Wet Well: 20 to 50 years			20 to 50 years	
Construction Materials	Concrete; fiberglass; polyethylene/plastic.	Pipe: PVC SDR 35 Manhole: Concrete	Pipe: PVC SDR 21; HDPE Pump: Stainless Steel; Engineered Composite	Pipe: PVC SDR 35 Manhole: Concrete	Pipe: PVC SDR 21; HDPE Pump: FRP; HDPE; LLDPE	Pump: Cast Iron; Stainless Steel; Aluminum Structures: Concrete; Steel; Fiberglass			PVC SDR 21	PVC SDR 21; Ductile Iron Pipe (DIP)
Other Issues	Approximately $200 cost for 1,000-gallon tank; odors are common but controllable through adequate operations and maintenance.	Annual operations and maintenance cost is $0.10/ft. Odors are common but controllable through adequate operations and maintenance.	Actual pump cost dependent on flow and head requirements; annual operation and maintenance cost is $35 a pump and $0.10/ft; user(s) pay for electricity to operate pump unit.	Annual operation and maintenance cost is $0.10/ft.; manholes are required at changes in sewer direction and at intervals not to exceed 400 ft.	Actual pump cost dependent on flow and head requirements; annual operation and maintenance cost is $45 a pump and $0.10/ft.; flow must achieve 3 to 5 fps daily for self cleansing; user(s) pay for electricity to operate.	Actual pump cost dependent on flow and head requirements; annual operation and maintenance cost is approximately 5 percent of construction cost. Power outages can result in overflows if standby generators are not available. Pumps and valves require routine maintenance; odors are common, but controllable through adequate operation and maintenance.			Actual piping cost depends on pipe material and diameter; annual operation and maintenance cost is $0.10/ft.; requires operation of pump station; odors are common at discharge manhole because anaerobic conditions promote formations of hydrogen sulfides.	
Select?	No	No	No	Yes	Yes for select houses in select areas.	Yes	Maybe		No	Yes

4.01 INTRODUCTION

This section describes the infrastructure recommended for the selected watersheds. In all, 23 infrastructure projects were identified for the five selected watersheds totaling approximately $39.5 million. Table 4.01-1 provides a list of the proposed projects, number of customers expected to benefit from the projects, and the estimated cost normalized on a per customer basis. The appendix provides opinions of probable construction cost (OPCC) for each project. Two OPCCs are presented for each watershed. The first is the OPCC to provide the necessary infrastructure for the 20-year design. The second is the OPCC for the infrastructure needed to be put in place to allow for ultimate build-out. Note the second OPCC does not include the cost for local sewers that need to be constructed to serve the areas in question.

4.02 MILL CREEK (WATERSHED 1) RECOMMENDED PLAN

Figure 4.02-1 shows the recommended infrastructure for the Mill Creek watershed. Three separate projects are recommended to serve current residents. Table 4.02-1 shows the cost for each project. Cost for the recommended infrastructure is $4.0 million. The total capital cost for future recommended infrastructure to help build out the watershed is $2.6 million.

There is the potential that existing pump stations and force mains in the Shadow Creek, Stone Creek, and Pine Valley Subdivisions may need to be upsized depending on the flows added from the new connections. Costs for these potential upgrades are not included in this study.

4.03 FREEMAN CREEK (WATERSHED 2) RECOMMENDED PLAN

Figure 4.03-1 shows the recommended infrastructure for the Freeman Creek watershed. Four separate projects are recommended for current residents. Table 4.03-1 shows the cost for each project. Cost for the recommended infrastructure is $4.3 million. The total capital cost for future recommended infrastructure to help build out the watershed is $4.1 million.

There is the potential that existing Cedars Pump Station and force main may need to be upsized depending on the flows added from the new connections. Another future alternative will be to eliminate the existing Cedars Pump Station and install a gravity sewer as shown on Figure 4.03-1. Costs for these potential upgrades are not included in this study.

4.04 BUFFALO CREEK 2 (WATERSHED 4) RECOMMENDED PLAN

Figure 4.04-1 shows the recommended infrastructure for the Buffalo Creek 2 watershed. Six projects are recommended to serve current residents. Some projects would have to be completed before other projects can begin. Table 4.04-1 shows the cost for each project. Costs for the recommended infrastructure is $13.2 million. The total capital cost for future recommended infrastructure to help build out the watershed is $1.1 million.

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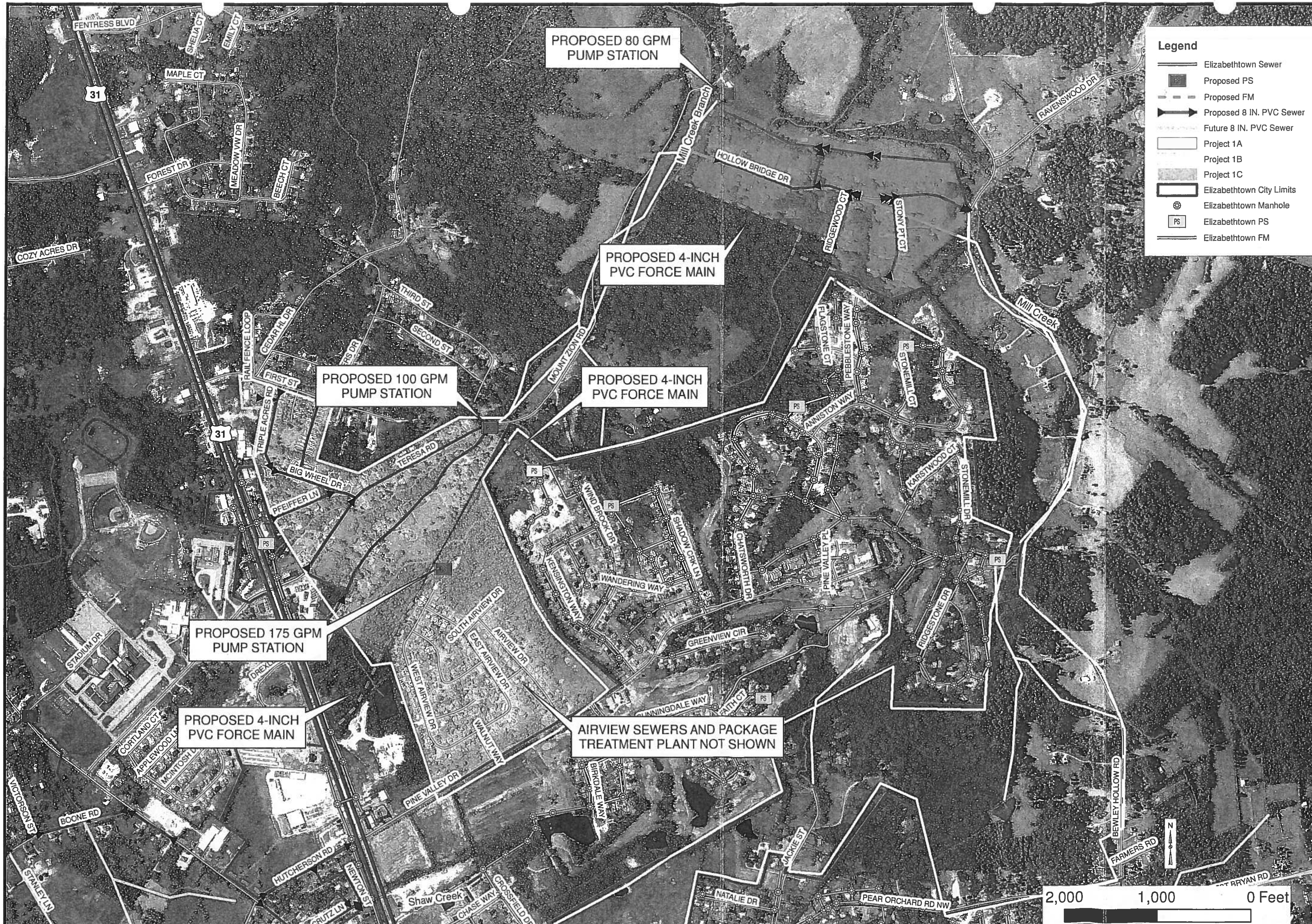
TABLE 4.01-1

CAPITAL COST FOR IDENTIFIED PROJECTS TO SERVE EXISTING CUSTOMERS IN SELECTED WATERSHEDS

Project	Preceding Projects	Name	Number of Customers	Existing Service	LTHD Concerns	Construction Cost ($M)	Contingencies and Technical Services ($M)	Total Capital Cost ($M)	Cost per Customer ($)
1A	None	Airview Estates PS and FM Project	209	Package Plant	High	0.25	0.09	0.34	2,000
1B	None	Teresa Road Sewer Project	118	On-site	None	1.45	0.51	1.95	17,000
1C	None	Hallow Bridge Sewer Project	48	On-site	High	1.24	0.43	1.68	35,000
2A	None	Columbus Drive Sewer Project	52	On-site	High	1.03	0.36	1.39	27,000
2B	None	Deer Run Way Sewer Project	40	On-site	None	0.72	0.25	0.97	24,000
2C	None	Woodsbend Drive Sewer Project	31	On-site	None	0.59	0.21	0.80	26,000
2D	None	Amberwood Drive Sewer Project	29	On-site	Moderate	0.82	0.29	1.10	38,000
4A	None	Lillian Avenue Sewer Project	115	On-site	High	1.63	0.57	2.20	19,000
4B	None	Gregory Street Sewer Project	121	On-site	High	1.78	0.62	2.41	20,000
4C	4B	Canary Dr Sewer Project	65	On-site	High	1.08	0.38	1.46	22,000
4D	4B, 4C	Eagle Pass Road Sewer Project	38	On-site	High	0.64	0.22	0.86	23,000
4E	4B, 4C, 4D	Tunnel Hill Road Sewer Project	207	On-site	None	2.64	0.92	3.56	17,000
4F	4B, 4C, 4D, 4E	Ridgeway Drive Sewer Project	175	On-site	None	2.02	0.71	2.72	16,000
10A	None	Partridge Way Sewer Project	45	On-site	Moderate	1.33	0.47	1.80	40,000
10B	None	Flat Rock Road Sewer Project	65	On-site	None	1.31	0.46	1.76	27,000
10C	None	Bacon Creek Road Sewer Project	124	On-site	None	2.08	0.73	2.81	23,000
10D	None	Autumn Way Sewer Project	216	On-site	None	3.97	1.39	5.36	25,000
10E	None	Serene Oaks Sewer Project	79	On-site	None	1.36	0.48	1.84	23,000
14A	None	Crutz Lane Sewer Project	50	On-site	Moderate	0.68	0.24	0.92	18,000
14B	14A	Victorson Street Sewer Project	71	On-site	Moderate	1.48	0.52	2.00	28,000
14C	14A, 14B	Walter Boone Road Sewer Project	25	On-site	Moderate	0.38	0.13	0.51	20,000
14D	14A, 14B, 14C	Thunderwood Drive Sewer Project	32	On-site	Moderate	0.68	0.24	0.92	29,000
14E	14A, 14B, 14C, 14D	Berkshire Avenue Sewer Project	27	On-site	Moderate	0.22	0.08	0.30	11,000
		TOTAL (Rounded)	1,982					**39.66**	



MILL CREEK (WATERSHED 1) RECOMMENDED INFRASTRUCTURE

ELIZABETHTOWN PERIMETER SEWER STUDY
HARDIN COUNTY WATER DISTRICT NO. 2 AND CITY OF ELIZABETHTOWN
HARDIN COUNTY, KENTUCKY

STRAND ASSOCIATES

FIGURE 4.02-1
5980.025

OPINION OF
PROJECT COST BREAKDOWN

CONTRACT 1-2012 PROJECT 1A GRAVITY COLLECTOR	OWNER: Hardin County Water District No. 2 US 62 Elizabethtown, KY 42701

NO.	ITEM	BID / CHANGE ORDER QTY	UNIT	UNIT COST	TOTAL
GRAVITY COLLECTOR SEWERS					
1	4" PVC force main	2,150	LF	$45	$96,750
2	Pumping Stations	1	EA	$150,000	$150,000
3	Automatic Air and Vacuum Release Assembly and Vault		EA	$3,500	
4	Stream crossing	20	LF	$75	$1,500
5	Tie-in to existing sewer manhole	1	EA	$600	$600
TOTAL - WATERSHED 4 GRAVITY COLLECTOR SEWERS					$249,000
TOTAL - CONTRACT 1-2012					$249,000