

# WATER AND WASTEWATER

## CAPITAL PLAN AND IMPACT FEE ANALYSIS

*prepared for* CITY OF FAYETTEVILLE, ARKANSAS  
AND  
FARMINGTON, ELKINS AND GREENLAND



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## EXECUTIVE SUMMARY

The City of Fayetteville owns and operates regional wastewater and water utilities. This study quantifies capital facility capacity demand, cost and impact fees for new development in Fayetteville and in some of the cities that connect to the Fayetteville system. It also quantifies local impact fees for in-town facilities that are owned and operated by client communities.

Five wastewater and three water impact fees are calculated here, differentiated based on the type of improvement (“system” or “local”) and owner of the facilities. Wastewater fees are calculated for system improvements (treatment plant and related piping) and for in-city collection system expansion for Fayetteville, Farmington, Elkins and Greenland. Water impact fees are calculated for system improvements (major transmission lines), for local improvements for Fayetteville-owned facilities, and for Elkins local improvements (the in-town distribution system in Elkins is separately owned by the City of Elkins).

The different fees can be quickly reviewed by reference to Table 1 and Table 2. Table 3 may be particularly helpful in that it shows revenue distribution, using as an example one single-family home built in Fayetteville, Farmington, Elkins, and Greenland.

Fees calculated in this analysis are the maximum that could be adopted by the cities. The purpose of an impact fee analysis is to quantify the maximum supportable impact fee amount. The local governing body may choose to enact lower fees.

Fayetteville and surrounding communities have experienced, and continue to experience, high rates of growth with increasing wastewater and water capital facilities demand. This analysis was initiated as a way to provide a new revenue source to help meet that demand, and to do so in a timely manner without undue burden on existing system users.

An impact fee is a one-time charge to new development. It pays for capital facilities, not for operations or maintenance expense, and is one of the most direct means local governments can employ to fund infrastructure, or to recoup costs already incurred for the benefit of new development. The amount of the fee is a carefully calculated pro rata share of the cost attributable to demand from new development. Typically, the amount of the fee is less than the cost of the required capital facilities because impact fees are reduced by credits to account for other funding sources, future payments by new development for facilities funded by impact fees, and other future payments for which no benefit will be received.

Impact fee assessment in Arkansas is governed by an impact fee enabling act – the *Development Impact Fees Act*. This analysis follows the requirements of the *Act*, and so defines equitable, proportionate and defensible impact fees.

Table 1 and Table 2 show maximum impact fees for each land use and facility type. Single-family<sup>1</sup> fees are presented in two forms to allow the option for assessment either as a flat rate fee, or as variable rate fee based on square footage. Variable rate fees offer the advantage of mitigating potential housing affordability impact, because smaller units are charged at a reduced fee rate.

<sup>1</sup> Single-family includes single-family detached units. Attached single-family, duplex, triplex, fourplex, apartments, and condominiums are classified as multi-family, and mobile home is separately identified.

# Executive Summary

Table 1

<b>MAXIMUM WASTEWATER IMPACT FEES</b>				
Fayetteville and Related Service Areas				
	Fayetteville	Farmington	Elkins	Greenland
<b>System Improvements</b>				
Single-Family (average)	\$1,247	\$1,247	\$1,247	\$1,247
Single-Family Variable Rate				
Single-Family, up to 1,300 square feet	\$1,028	\$1,028	\$1,028	\$1,028
Single-Family, 1,301 to 1,700 square feet	\$1,299	\$1,299	\$1,299	\$1,299
Single-Family, 1,701 to 2,300 square feet	\$1,466	\$1,466	\$1,466	\$1,466
Single-Family, more than 2,300 square feet	\$1,643	\$1,643	\$1,643	\$1,643
Multi-Family	\$887	\$887	\$887	\$887
Mobile Home	\$1,247	\$1,247	\$1,247	\$1,247
Nonresidential				
5/8" x 3/4" meter	\$1,247	\$1,247	\$1,247	\$1,247
1" meter	\$3,117	\$3,117	\$3,117	\$3,117
1 1/2" meter	\$6,235	\$6,235	\$6,235	\$6,235
2" meter	\$9,976	\$9,976	\$9,976	\$9,976
3" meter	\$19,951	\$19,951	\$19,951	\$19,951
4" meter	\$31,174	\$31,174	\$31,174	\$31,174
6" meter	\$62,348	\$62,348	\$62,348	\$62,348
8" meter	\$99,757	\$99,757	\$99,757	\$99,757
10" meter	\$143,401	\$143,401	\$143,401	\$143,401
<b>Local Improvements</b>				
Single-Family (average)	\$1,385	\$1,551	\$2,447	\$2,351
Single-Family Variable Rate				
Single-Family, up to 1,300 square feet	\$1,141	\$1,279	\$2,017	\$1,938
Single-Family, 1,301 to 1,700 square feet	\$1,442	\$1,616	\$2,549	\$2,449
Single-Family, 1,701 to 2,300 square feet	\$1,628	\$1,824	\$2,877	\$2,764
Single-Family, more than 2,300 square feet	\$1,825	\$2,045	\$3,225	\$3,099
Multi-Family	\$985	\$1,103	\$1,740	\$1,672
Mobile Home	\$1,385	\$1,551	\$2,447	\$2,351
Nonresidential				
5/8" x 3/4" meter	\$1,385	\$1,551	\$2,447	\$2,351
1" meter	\$3,461	\$3,878	\$6,117	\$5,877
1 1/2" meter	\$6,923	\$7,757	\$12,234	\$11,755
2" meter	\$11,076	\$12,411	\$19,575	\$18,808
3" meter	\$22,152	\$24,821	\$39,150	\$37,615
4" meter	\$34,613	\$38,783	\$61,172	\$58,774
6" meter	\$69,226	\$77,566	\$122,345	\$117,548
8" meter	\$110,762	\$124,106	\$195,752	\$188,077
10" meter	\$159,220	\$178,403	\$281,393	\$270,360
<b>Total</b>				
Single-Family (average)	\$2,631	\$2,798	\$3,694	\$3,598
Single-Family Variable Rate				
Single-Family, up to 1,300 square feet	\$2,169	\$2,307	\$3,045	\$2,966
Single-Family, 1,301 to 1,700 square feet	\$2,742	\$2,915	\$3,848	\$3,748
Single-Family, 1,701 to 2,300 square feet	\$3,094	\$3,290	\$4,343	\$4,230
Single-Family, more than 2,300 square feet	\$3,468	\$3,688	\$4,868	\$4,742
Multi-Family	\$1,872	\$1,990	\$2,627	\$2,559
Mobile Home	\$2,631	\$2,798	\$3,694	\$3,598
Nonresidential				
5/8" x 3/4" meter	\$2,631	\$2,798	\$3,694	\$3,598
1" meter	\$6,579	\$6,996	\$9,235	\$8,995
1 1/2" meter	\$13,157	\$13,991	\$18,469	\$17,990
2" meter	\$21,052	\$22,386	\$29,551	\$28,783
3" meter	\$42,104	\$44,773	\$59,102	\$57,567
4" meter	\$65,787	\$69,957	\$92,347	\$89,948
6" meter	\$131,574	\$139,915	\$184,693	\$179,896
8" meter	\$210,519	\$223,864	\$295,509	\$287,834
10" meter	\$302,621	\$321,804	\$424,794	\$413,762

Source – System improvements, local improvements and total, from Table 21, Table 22 and Table 23.

Table 2

<b>MAXIMUM WATER IMPACT FEES</b>		
Fayetteville and Related Service Areas		
	All (excluding Elkins)	Elkins
<b>System Improvements</b>		
Single-Family (average)	\$2,297	\$2,297
Single-Family Variable Rate		
Single-Family, up to 1,300 square feet	\$1,893	\$1,893
Single-Family, 1,301 to 1,700 square feet	\$2,393	\$2,393
Single-Family, 1,701 to 2,300 square feet	\$2,700	\$2,700
Single-Family, more than 2,300 square feet	\$3,027	\$3,027
Multi-Family	\$1,634	\$1,634
Mobile Home	\$2,297	\$2,297
<b>Nonresidential</b>		
5/8" x 3/4" meter	\$2,297	\$2,297
1" meter	\$5,741	\$5,741
1 1/2" meter	\$11,483	\$11,483
2" meter	\$18,373	\$18,373
3" meter	\$36,745	\$36,745
4" meter	\$57,414	\$57,414
6" meter	\$114,828	\$114,828
8" meter	\$183,725	\$183,725
10" meter	\$264,105	\$264,105
<b>Local Improvements</b>		
Single-Family (average)	\$658	\$1,204
Single-Family Variable Rate		
Single-Family, up to 1,300 square feet	\$542	\$992
Single-Family, 1,301 to 1,700 square feet	\$685	\$1,254
Single-Family, 1,701 to 2,300 square feet	\$773	\$1,416
Single-Family, more than 2,300 square feet	\$867	\$1,587
Multi-Family	\$468	\$856
Mobile Home	\$658	\$1,204
<b>Nonresidential</b>		
5/8" x 3/4" meter	\$658	\$1,204
1" meter	\$1,644	\$3,010
1 1/2" meter	\$3,288	\$6,020
2" meter	\$5,261	\$9,633
3" meter	\$10,522	\$19,266
4" meter	\$16,440	\$30,102
6" meter	\$32,880	\$60,205
8" meter	\$52,608	\$96,328
10" meter	\$75,624	\$138,471
<b>Total</b>		
Single-Family (average)	\$2,954	\$3,501
Single-Family Variable Rate		
Single-Family, up to 1,300 square feet	\$2,435	\$2,885
Single-Family, 1,301 to 1,700 square feet	\$3,078	\$3,647
Single-Family, 1,701 to 2,300 square feet	\$3,473	\$4,116
Single-Family, more than 2,300 square feet	\$3,894	\$4,614
Multi-Family	\$2,101	\$2,490
Mobile Home	\$2,954	\$3,501
<b>Nonresidential</b>		
5/8" x 3/4" meter	\$2,954	\$3,501
1" meter	\$7,385	\$8,752
1 1/2" meter	\$14,771	\$17,503
2" meter	\$23,633	\$28,005
3" meter	\$47,267	\$56,011
4" meter	\$73,854	\$87,517
6" meter	\$147,708	\$175,033
8" meter	\$236,333	\$280,053
10" meter	\$339,729	\$402,576

Source – System improvements, local improvements and total, from Table 41, Table 42 and Table 43.

Executive Summary

Revenue from the impact fees shown in Table 1 and Table 2 accrues to different local government entities, depending on the capital facility type and function (system or local improvements).

An example of this revenue distribution is shown in Table 3, based on construction of a single-family unit in Fayetteville, Farmington, Elkins and Greenland. The purpose of Table 3 is to illustrate point of collection versus the ultimate recipient of impact fees assessed in each municipality. (The distribution of impact fee revenue is governed by existing utility service agreements which specify how fee revenue is to be collected, how held, and then where remitted.)

Table 3

<b>IMPACT FEE REVENUE DISTRIBUTION (single-family example)</b>							
An Example of Revenue Distribution for a Single Unit of Development in Fayetteville, Farmington, Elkins, or Greenland							
Impact Fee	Fayetteville Revenue (point of collection)				Farmington Revenue	Elkins Revenue	Greenland Revenue
	Fayetteville	Farmington	Elkins	Greenland			
Wastewater System	\$1,247	\$1,247	\$1,247	\$1,247			
Local	\$1,385				\$1,551	\$2,447	\$2,351
Water System	\$2,297	\$2,297	\$2,297	\$2,297			
Local	\$658	\$658		\$658		\$1,204	
<b>Total (water &amp; wastewater)</b>	<b>\$5,586</b>	<b>\$4,201</b>	<b>\$3,544</b>	<b>\$4,201</b>	<b>\$1,551</b>	<b>\$3,651</b>	<b>\$2,351</b>
Wastewater (only)	\$2,631	\$1,247	\$1,247	\$1,247	\$1,551	\$2,447	\$2,351
Water (only)	\$2,954	\$2,954	\$2,297	\$2,954		\$1,204	

Source – Single-family impact fees from Table 1 and Table 2.

Fees in this analysis are generally similar to national average impact fees for similar facilities. Table 4 shows a comparison of single-family wastewater and water impact fees.

Table 4

<b>COMPARATIVE SINGLE-FAMILY IMPACT FEES</b>		
Proposed Impact Fees, Fayetteville Wastewater/Water		
	Wastewater	Water
National Average Fees (2007)	\$2,885	\$3,232
Maximum Potential Fayetteville Area Fees		
Fayetteville	\$2,631	\$2,954
Farmington	\$2,798	\$2,954
Elkins	\$3,694	\$3,501
Greenland	\$3,598	\$2,954

Source – Comparative fees based on an on-going survey by Duncan Associates as of August 12, 2007. National fee rates are the average of a nonrandom survey of jurisdictions that have wastewater or water impact fees. Fayetteville single-family impact fees from Table 1 and Table 2.



Table 5 shows maximum impact fee revenue for a period of the next 10 years, assuming that fees are assessed at maximum rates (Table 1 and Table 2) and that growth occurs at the rate projected.<sup>2</sup>

If each unit of new development pays both wastewater and water fees, each community – Fayetteville, Farmington, Elkins and Greenland – could realize total revenue of \$73.2 million, \$813,000, \$1.0 million and \$482,000, as follows:

Table 5

<b>MAXIMUM POTENTIAL IMPACT FEE REVENUE: 2008 TO 2017</b>				
Proposed Impact Fees, Fayetteville Wastewater/Water				
Year	Fayetteville	Farmington	Elkins	Greenland
<b>Wastewater</b>				
2008	\$2,667,547	\$70,552	\$65,207	\$39,765
2009	\$2,724,602	\$72,753	\$67,094	\$41,438
2010	\$2,782,893	\$75,023	\$69,035	\$43,181
2011	\$2,842,450	\$77,363	\$71,033	\$44,997
2012	\$2,903,299	\$79,777	\$73,089	\$46,889
2013	\$2,965,470	\$82,265	\$75,204	\$48,861
2014	\$3,028,991	\$84,832	\$77,380	\$50,916
2015	\$3,093,894	\$87,478	\$79,619	\$53,058
2016	\$3,160,208	\$90,208	\$81,923	\$55,290
2017	\$3,227,965	\$93,022	\$84,294	\$57,615
Total	\$29,397,319	\$813,272	\$743,877	\$482,010
<b>Water</b>				
2008	\$3,955,847	na	\$26,066	na
2009	\$4,044,648	na	\$26,820	na
2010	\$4,135,445	na	\$27,596	na
2011	\$4,228,283	na	\$28,395	na
2012	\$4,323,207	na	\$29,216	na
2013	\$4,420,264	na	\$30,062	na
2014	\$4,519,503	na	\$30,932	na
2015	\$4,620,972	na	\$31,827	na
2016	\$4,724,722	na	\$32,748	na
2017	\$4,830,803	na	\$33,695	na
Total	\$43,803,695	na	\$297,356	na
<b>Wastewater and Water</b>				
2008	\$6,623,394	\$70,552	\$91,272	\$39,765
2009	\$6,769,250	\$72,753	\$93,914	\$41,438
2010	\$6,918,339	\$75,023	\$96,631	\$43,181
2011	\$7,070,733	\$77,363	\$99,428	\$44,997
2012	\$7,226,506	\$79,777	\$102,305	\$46,889
2013	\$7,385,734	\$82,265	\$105,265	\$48,861
2014	\$7,548,494	\$84,832	\$108,312	\$50,916
2015	\$7,714,866	\$87,478	\$111,446	\$53,058
2016	\$7,884,929	\$90,208	\$114,671	\$55,290
2017	\$8,058,768	\$93,022	\$117,989	\$57,615
Total	\$73,201,013	\$813,272	\$1,041,232	\$482,010

Source –Table 27 and Table 47 (for wastewater and water respectively).

<sup>2</sup> Maximum revenue also assumes no fee exemptions, for example, for affordable housing.

## Legal Context – The Arkansas Development Impact Fees Act

Impact fees in Arkansas are governed by Title 14, Chapter 56 of the Arkansas Code<sup>3</sup> (*Development Impact Fees Act* or, as referred to in this report, the *Development Impact Fees Act*). The *Act* establishes certain requirements for an impact fee system. It also allows some latitude in the quantification of fees and documentation of an analysis, because it does not enumerate specific requirements for much of the reasoning and analytical detail that characterize a fee analysis. Instead, it relies on established legal principles and norms of practice.

Specific elements required by the *Development Impact Fees Act* include:

1. a capital plan describing cost and capacity of new development capital facilities;<sup>4</sup>
  2. a statement of facilities to be financed by impact fees;<sup>5</sup>
  3. a statement describing level of service standards;<sup>6</sup> and
  4. illustration of the formula used to calculate the impact fee.<sup>7</sup>
- New development capital facility cost and capacity demand are defined in each chapter in the section “Capital Facilities Need & Level of Service.”
  - Facilities to be funded with impact fees are listed in the section “Capital Facilities Plan.”
  - Level of service standards are shown in “Capital Facilities Need & Level of Service.”
  - The formula used to calculate impact fees in this analysis is the same for each impact fee and property type, as follows:

$$\text{Net Cost per Service Unit} \times \text{Service Unit Generation Rate} = \text{Impact Fee Amount}$$

Net cost per service unit and service unit generation rates by property type are defined in the section “Revenue Credits & Net Cost per Service Unit” and “Demand Equivalency,” respectively.

## Eligible Capital Facility Types

The *Development Impact Fees Act* is specific regarding the kinds of facilities that can be funded by impact fees and the acceptable uses of impact fee revenue. In general, impact fees can be used to fund capital projects that provide capacity to meet demand from new development. There are nine categories of facilities approved for impact fee funding, including water and wastewater.<sup>8</sup>

<sup>3</sup> Arkansas Code (Non annotated) > Title 14. Local Government. > Subtitle 3. Municipal Government. > Chapter 56. Municipal Building and Zoning Regulations - Planning. > Subchapter 1. General Provisions. > 14-56-103. Development impact fees.

<sup>4</sup> Ark. Code § 14-56-103(a)(1)

<sup>5</sup> Ark. Code. § 14-56-103(e)(3)(A)

<sup>6</sup> Ark. Code § 14-56-103(e)(3)(A)

<sup>7</sup> Ark. Code. § 14-56-103(e)(3)(B)

<sup>8</sup> Ark. Code. § 14-56-103(a)(7)(A) – “Water supply, treatment, and distribution for either domestic water or for suppression of fires;” and Ark. Code. § 14-56-103(a)(7)(A) – “Wastewater treatment and sanitary sewerage.”

## Impact Fee Service Areas

Impact fees are calculated and assessed in terms of specific geographic areas, called “service areas.” Service areas are an integral part of the analysis in the following chapters. This is particularly so for this fee study because, although there are only two subject capital facility types, there are multiple service areas that delineate different capital facilities and different functions.

A service area is an area in which a defined set of improvements provide benefit to development. All new development of a type within a service area (all single-family or all commercial, for example) is subject to the same impact fee rate, and impact fees collected within a service area must be spent within the same service area.

Service areas are not specifically mentioned in the *Development Impact Fees Act*, so local governments in Arkansas have some discretion in their designation. In general, capital facilities within a service area should be reasonably accessible, and should be available to provide service to new development throughout the service area. It should also be the case that roughly the same level of service (LOS) is provided throughout the area.

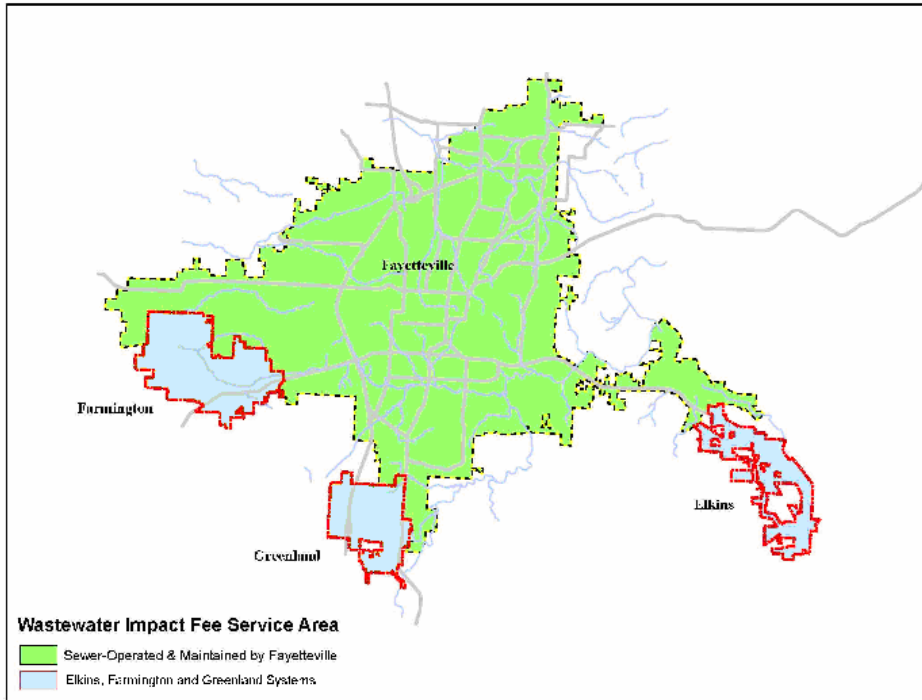
The definition of a large number of small service areas is problematic and as a general rule, the fewer the number of service areas the better. Because funds collected within a service area must be spent within the same area, and because collected fee revenue must be spent within seven years of the date of collection, the creation of multiple small service areas will restrict the flexibility of spending and may make it impossible to accumulate sufficient revenue to fund any of the intended improvements within the time allowed.

Facility types that are the subject of this analysis provide regional service, or provide service within individual cities that is similarly integrated, though on a smaller scale. Regional service provision means that the facilities provide service capacity and redundancy by means of regional assets. In particular, facilities represented by the “system improvement” impact fee integrate multiple local and project-level capital improvements. These characteristics argue for the definition of single service area for each of the system improvement impact fees. Maps of the service areas are shown on the following page.

For wastewater, there are four service areas for local improvements – one each for Fayetteville, Farmington, Elkins and Greenland. Separate service areas are defined because part or all of each of the systems are owned by the client communities. Water service areas are different, because most of the system is owned by Fayetteville. For water, one local improvement service area is defined for the Fayetteville-owned system, and one is defined for the Elkins in-town system (which is owned by the City of Elkins).

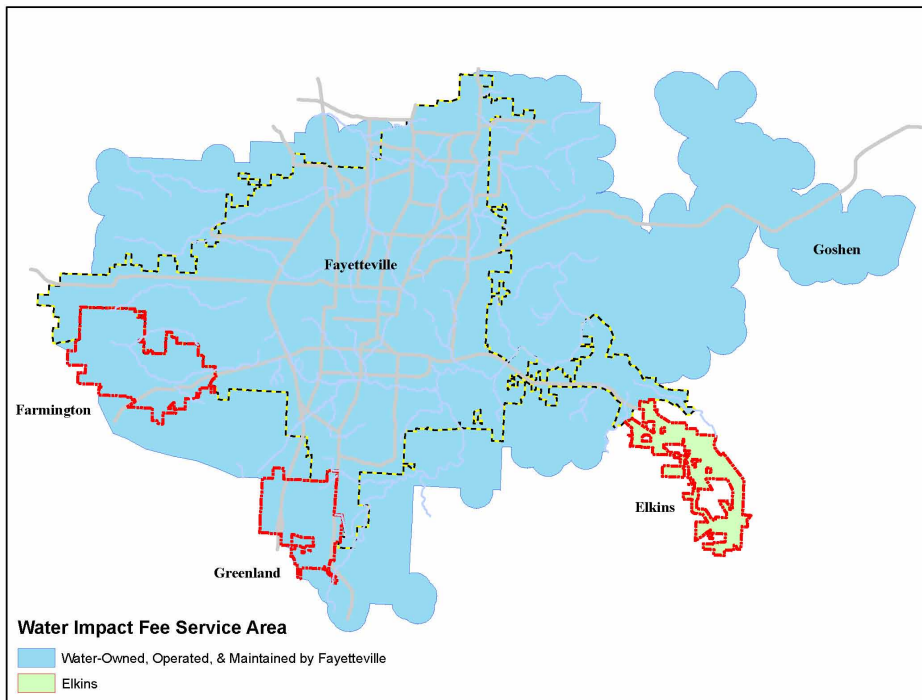
Executive Summary

Figure 1



Source – Fayetteville Engineering Department. The map is useful for illustrative purposes. However, city and water/wastewater service district boundaries change over time and may be different from that shown above.

Figure 2



Source – Fayetteville Engineering Department. The map is useful for illustrative purposes. However, city and water/wastewater service district boundaries change over time and may be different from that shown above.

Note that the boundaries of the service areas may change in the future, to match annexations. If annexation areas are primarily undeveloped land, and do not have the effect of adding population or improved property (new service demand), then impact fees need not be revised. If however the effect of an annexation is to increase capital facility service demand, then the effect on the impact fees should be evaluated, and this analysis potentially revised.

## Fee Calculation Methodology

This analysis employs multiple calculation methodologies because of the different kinds of data available to support the analysis.

Water and wastewater facilities are defined for purposes of impact fee assessment in terms of two functional components – “system improvements” and “local improvements.” System improvements serve multiple “client” cities. Local improvements are capital facilities or parts of facilities that uniquely serve in-town demand. An impact fee is separately calculated and assessed for each component, within each geographic area (“impact fee service area”). Revenue from the system improvements fee is remitted to the provider of the system improvements – the City of Fayetteville. Revenue from the local improvements fee is remitted to the service provider – depending on the fee, Fayetteville, Farmington, Elkins, or Greenland. (Revenue distribution is illustrated in Table 3.)

In general, the system and local improvements fees are calculated using either a “plan-based” or an “incremental expansion” approach – both standard methodologies, widely used to calculate impact fees. Both methodologies are valid and both yield an equitable accounting of the cost of demand from new development. Plan-based analysis relies on a master plan and an attendant Capital Improvement Plan (CIP) to define cost uniquely attributable to new development. Incremental expansion defines cost in terms of the current average cost of capital facilities service provision and is calculated based on the value (replacement cost) of the current inventory. A permutation of incremental expansion methodology is to define the fee in terms of average cost based on “end-state” analysis. This is useful when either the current inventory or current capacity utilization is not known, and defines unit cost not in terms of current demand units and inventory value, but rather in terms of “end-state” (design year or build-out) number of service units and value. Incremental expansion typically relies on current inventory cost. End-state analysis adds consideration of pending master plan projects, usually required in order to provide sufficient end-state (build-out) capacity.

Fees in this report are reduced by revenue credits that offset future debt principal payments by new development, or that account for on-going funding dedicated to the provision of capacity for new development. Determination of the need for credit is guided by norms of practice, equity and principles of case law. The reasoning by which the need for revenue credit is validated is as follows.

One of the most fundamental principles of impact fees, rooted in both case law and norms of equity, is that impact fees should not charge new development for a higher level of service than is provided existing development. While impact fees can be based on a higher level of service than the one existing at the time of the adoption of the fees, two things are required if this is to be done. First, another source of funding other than impact fees must be identified and committed to fund the deficiency created by the higher level of service. Second, the impact fees must generally be reduced to ensure that new development does not pay twice for the same level of service, once

through impact fees and again through general taxes that are used to remedy the capacity deficiency for existing development. In order to avoid these complications, general practice is to base the impact fees on the existing level of service.

A corollary principle is that new development should not have to pay more than its proportionate share when multiple sources of payment are considered. As above, if impact fees are based on a higher-than-existing level of service, the fees should be reduced by a credit that accounts for the contribution of new development toward remedying the existing deficiencies. A similar situation arises when the existing level of service has not been fully paid for. Outstanding debt on existing facilities that are counted in the existing level of service will be retired, in part, by revenue generated from new development. Given that new development will pay impact fees to provide the existing level of service for itself, the fact that new development may also pay (by virtue of being part of the tax base at-large) for facilities for existing development, could amount to paying for more than its proportionate share. Consequently, impact fees should be reduced to account for future payments that will retire outstanding debt on existing facilities.

The issue is less clear-cut when it comes to other types of revenue that may be used to make capacity-expanding capital improvements of the type being funded by impact fees. In most cases no credit is warranted, since, while new development may contribute towards such funding, so does existing development, and both existing and new development benefit from the higher level of service that the additional funding makes possible. In some cases credit may be provided for future revenue that is earmarked for capacity-expanding improvements of a type funded by impact fees.

Sometimes credit is provided for outstanding grants for capacity improvements that can reasonably be anticipated in the future. In addition to the arguments presented above (i.e., grants raise the level of service and benefit new development as well as existing development), two additional arguments can be made against applying credit for grants. First, new development in a community does not directly support State and Federal grants in the same way they pay local gasoline and property taxes. Second, future grant funding is far more uncertain than dedicated revenue streams. In this study, therefore, credit will not be provided for potential Federal or State grant funding.

## WASTEWATER

This chapter shows calculation of the wastewater impact fees for Fayetteville, and for the client cities of Farmington, Elkins and Greenland.

Wastewater fees in this analysis have two components, based on the way service in each municipality is provided – a fee for system improvements and a separate fee for locally owned improvements that serve in-town demand. Impact fees are collected in each of the four cities, at rates as shown in Table 1 and Table 2. In many cases, however, the point of collection for impact fee revenue differs from the ultimate recipient of the revenue. Regardless of what city collects the fee, system improvements fee revenue is remitted to the City of Fayetteville (the provider of system facilities). Local improvements fee revenue is retained by the city that collects the fee. (Revenue distribution is illustrated in Table 3.)

The system improvements fee pays the cost of plant capacity, associated transmission lines and that part of the Fayetteville collection system that serves demand from other cities. (The Fayetteville system not only meets in-town, Fayetteville demand, but also provides transmission capacity to convey wastewater from other cities to the treatment plants). The local improvements fee pays the cost of in-town collection system capacity (each city has a locally owned in-town system that meets local demand and is connected to the regional system by means of system facilities).

### Service Area

The wastewater system serves Fayetteville, Farmington, Elkins, Greenland and parts of Johnson and Washington County. Impact fees are here calculated for the cities of Fayetteville, Farmington, Elkins and Greenland.

The wastewater impact fee is assessed by means of four service areas (illustrated in Figure 1), each corresponding to the boundaries of the four participating municipalities. The system fee is assessed at the same rate by property type, across all service areas, because the same level of service prevails in each and because the same service is provided – wastewater transmission and treatment. Such an approach is consistent with the integrated nature of the facilities (redundancy, for example, is provided by facilities district-wide) and with the operations, management and capital facilities planning approach employed by the service provider (Fayetteville Water/Wastewater management and engineering staff). The local improvement fees are assessed at different rates in each service area because the local impact fee accounts for different service standards and quantities of in-place facilities in each locality.

### Service Demand

Service demand is quantified in terms of the number of equivalent dwelling units (EDU) projected to connect to the system. Residential equivalent demand is used as a way a way to express demand for various dissimilar property types, in terms of a common measure (an “EDU”). This section shows the calculation of current and future demand units. Demand equivalency (the number of service units for each impact fee property type) is calculated in the next section.

The process by which the quantity of current and future service units is calculated, is as follows:

## Wastewater

estimate current single-family demand and by means of that, current total service units (Table 6); estimate the future population growth rate (Table 7); and then calculate annual new service units as the product of prior year units and the growth rate (Table 8).

Current total service units are calculated in Table 6.

Table 6

<b>CURRENT WASTEWATER DEMAND (SERVICE UNITS, 2006)</b>							
Wastewater Impact Fee							
	Total (excluding Elkins)	Fayetteville	Farmington	Elkins	Greenland	Other	Total
<b>Single Family Capacity Demand (2006, average)</b>							
Single Family Wastewater Flow (gallons)	1,103,461,300						
Days in Year	365						
# Single Family Connections (active, December 2006)	16,116						
GPD per Single Family Connection (EDU)	188						
<b>Total Service Units</b>							
Total Wastewater Flow (gallons, 2006)	3,117,267,900	96,792,300	61,279,300	26,424,400	8,771,000	3,310,534,900	
Days in Year	365	365	365	365	365		
GPD per EDU	188	188	188	188	188		
<b>Total Service Units (EDU)</b>	<b>45,528</b>	<b>1,414</b>	<b>895</b>	<b>386</b>	<b>128</b>	<b>48,350</b>	

Source – Wastewater flow (gallons) and number of connections from City of Fayetteville billing data. GPD per EDU is GPD per single-family unit. GPD per single-family connection and number of service units by area are calculated as discussed below.

Single-family demand, expressed in terms of gallons per day (GPD) per EDU, is calculated as the quotient of average single-family wastewater capacity demand (gallons per year), number of days in the year and number of single-family connections. Total service units is the quotient of annual wastewater flow, number of days in the year, and GPD per EDU.



Population growth is projected based on facility plans, or projections by the Northwest Arkansas Regional Planning Commission, as follows:

Table 7

<b>POPULATION PROJECTIONS</b>							
Wastewater Impact Fee							
Population							
2000	2005	2010	2015	2020	2025	2030	Avg. Ann. Rate
<b>Wastewater Service Population</b>							
Fayetteville	71,734	81,451	91,167	100,884	110,600	120,317	2.1%
Farmington	4,476	5,511	6,545	7,579	8,613	9,648	3.1%
Elkins	2,223	2,686	3,148	3,611	4,074	4,536	2.9%
Greenland	1,226	1,668	2,109	2,551	2,992	3,434	4.2%
Johnson	3,226	4,087	4,948	5,809	6,670	7,531	3.4%
Total	82,885	95,403	107,917	120,434	132,949	145,466	2.3%
Washington County	188,006	218,296	244,194	270,091	295,989	321,887	2.2%

Source – Fayetteville, Farmington, Johnson and Washington County from Northwest Arkansas Regional Planning Commission, *Northwest Arkansas Regional Transportation Study*, page 18, April 2006. Elkins and Greenland from facility master plan studies, by McClelland Consulting Engineers, September 2006. Projections for certain parts of the district – the growth area and RDA – are not shown because data is not separately available. The 2001 projected population growth rate as shown in the wastewater master plan (*Facility Plan Amendment, Final, Wastewater System Improvement Project, City of Fayetteville*, McGoodwin, Williams and Yates Inc, August 2001) is 2% per year.

Annual new service units are projected as follows:

Table 8

<b>PROJECTED WASTEWATER SERVICE DEMAND (SERVICE UNITS)</b>						
Wastewater Impact Fee						
Service Area Total						
	Fayetteville	Farmington	Elkins	Greenland	Other	Total
<b>Projected Average Annual Growth</b>	2.1%	3.1%	2.9%	4.2%	2.3%	
<b>Service Units (EDU)</b>						
2006	45,528	1,414	895	386	128	48,350
2007	46,479	1,458	921	402	131	49,391
2008	47,451	1,503	948	419	134	50,455
2009	48,442	1,550	975	437	137	51,541
2010	49,455	1,598	1,003	455	140	52,652
2011	50,489	1,648	1,032	474	143	53,787
2012	51,544	1,700	1,062	494	147	54,947
2013	52,621	1,753	1,093	515	150	56,132
2014	53,721	1,807	1,124	537	153	57,343
2015	54,844	1,864	1,157	559	157	58,581
2016	55,991	1,922	1,190	583	160	59,846
2017	57,161	1,982	1,225	607	164	61,139
2018	58,356	2,044	1,260	633	168	62,460
2019	59,575	2,108	1,297	659	172	63,811
2020	60,821	2,173	1,334	687	176	65,191
2021	62,092	2,241	1,373	716	180	66,602
2022	63,390	2,311	1,413	746	184	68,043
2023	64,715	2,383	1,454	777	188	69,517
2024	66,067	2,458	1,496	810	192	71,023
2025	67,448	2,534	1,539	844	196	72,562
2026	68,858	2,613	1,583	880	201	74,136
2027	70,298	2,695	1,629	917	205	75,744
2028	71,767	2,779	1,676	955	210	77,388
2029	73,267	2,866	1,725	995	215	79,068
2030	74,798	2,955	1,775	1,037	220	80,785

Source – 2006 service units from Table 6. Average annual growth rate is the population growth rate from Table 7. Annual service units is calculated as the product of prior total units and the growth rate.

## Demand Equivalency

Demand equivalency is the means by which average service demand attributable to each property type is calculated (the “service unit generation rate,” or number of service units for a unit of each property type). Demand equivalency is summarized as follows:

Table 9

<b>DEMAND EQUIVALENCY TABLE</b>		
Wastewater and Water Impact Fees		
Property Type	Meter Capacity (gpm)	Service Unit Generation Rate (EDU)
<b>Residential (flat rate option)</b>		
Single-Family	na	1.00
Multi-Family	na	0.71
Mobile Home	na	1.00
<b>Single-Family (variable rate option)</b>		
Single-Family, up to 1,300 square feet	na	0.82
Single-Family, 1,301 to 1,700 square feet	na	1.04
Single-Family, 1,701 to 2,300 square feet	na	1.18
Single-Family, more than 2,300 square feet	na	1.32
<b>Nonresidential</b>		
5/8" x 3/4" meter	10	1.00
1" meter	25	2.50
1 1/2" meter	50	5.00
2" meter	80	8.00
3" meter	160	16.00
4" meter	250	25.00
6" meter	500	50.00
8" meter	800	80.00
10" meter	1,150	115.00

Source – service unit generation rate is the quotient of meter capacity and meter capacity for (flat rate) single-family. Nonresidential meter capacities are maximum safe flow rates from AWWA (American Water Works Association) Manual M6, Meters – Selection, Installation, Testing, and Maintenance. Residential from Table 10.

Service unit generation rates for nonresidential are based on water meter size and are calculated as the ratio of meter capacity for each property type to that of single-family. Water meter capacity is a typical measure of wastewater consumption (which is un-metered) because it is based on the reasonable assumption that wastewater demand is proportionate to water demand.

Residential service unit generation rates are quantified based on household size (calculated as shown in Table 10).

This analysis uses the same service unit generation rates for each property type, in each service area, for both system and local improvements. This is based on the assumption that capacity demand presented by a property type is proportionately the same, with respect to the other property types, throughout the district. (Put differently, although the unit cost of service may differ by area, relative service unit generation rates are assumed to be constant across all areas.)

In Table 9 note that there are two options for the determination of single-family service unit generation rates – average and variable rate demand. Average residential demand is differentiated only in terms of property type (single-family, multifamily and mobile home). Variable rate single-family demand is differentiated based on square footage – smaller homes are assigned reduced

service unit generation rates based on evidence that, on average, smaller units have smaller household size. This approach potentially mitigates housing affordability impact because smaller units are assessed a reduced impact fee.

Calculation of residential demand relies on analysis of household size. The variable rate option, in particular, relies on methodology to define a (statistically significant) quantitative relationship between household size and unit square footage. This report will rely on the analysis conducted for the 2002 wastewater/water impact fee study.<sup>9</sup>

Variable rate demand is an order of magnitude estimate of a relationship thought to exist between units of different size. A key estimating parameter is household size.<sup>10</sup> Household size, especially relative size from one square footage category to another is unlikely to have changed meaningfully, in the few years since the 2002 analysis. Given that, along with the nature of the analytical methodology, it is questionable as to whether updated indices would improve or would in fact degrade the current demand estimate. Accordingly, and in view of the fact that that indices which are consistent over time confer a level of predictability valued by fee payers (even though the rate may change, the cost relationship between property types and sizes remains the same), this analysis will use the current service unit generation rates.

Note that, because wastewater and water demand are directly related, demand indices in Table 9 will also be used to define service unit generation for water capital facilities in the next chapter.

Residential demand is calculated as shown below.

Table 10

<b>VARIABLE RATE RESIDENTIAL DEMAND</b>		
Wastewater and Water Impact Fees		
Dwelling Unit Type	Average Household Size	Service Unit Generation Rate (EDU)
<b>Single-Family (variable rate option)</b>		
Single-Family, up to 1,300 square feet	1.97	0.82
Single-Family, 1,301 to 1,700 square feet	2.49	1.04
Single-Family, 1,701 to 2,300 square feet	2.81	1.18
Single-Family, more than 2,300 square feet	3.15	1.32
<b>Residential (flat rate option)</b>		
Single-Family	2.39	1.00
Multi-Family	1.70	0.71
Mobile Home	2.38	1.00

Source – the service unit generation rate for each property type and size is the quotient of household size and household size for average (flat rate) single-family. Household size is from *Revised Impact Fee Study: Wastewater and Water*, Duncan Associates, December 2002, Table 32. Mobile home service unit generation rate is rounded to 1.00.

<sup>9</sup> *Revised Impact Fee Study: Wastewater and Water, Fayetteville Arkansas*, Duncan Associates, December 2002.

<sup>10</sup> Duncan Associates has defined standard methodology, now commonly used, to calculate household size for different size units in a given geography, and then relate that by means of regression analysis, to unit square footage. The methodology uses U.S. Census data (“Public Use Microdata Sample” or PUMS data), which reports detailed household characteristics at different levels of geography. However, the available reporting units are aggregated at a level that does not distinguish between communities that make up the wastewater system service area, which makes demand estimation by service area unlikely to be useful.

## Capital Facilities Need & Level of Service

System improvements are provided as part of the WSIP project (the City of Fayetteville *Wastewater System Improvement Project* now underway and nearing completion). Cost attributable to demand from new development is \$116.4 million – which is the basis for calculation of the impact fee. (The WSIP capital plan is shown in Table 28. Total cost is \$186.1 million. Net cost to the City of Fayetteville is \$180.7 million. Of that, cost attributable to new development is \$116.4 million, derived as shown in Table 49.)

The system improvement component of the wastewater impact fee is calculated as a recoupment fee – a fee assessed to recover the cost of facilities built in anticipation of demand from future new development. The fee is based on the cost of treatment facilities and related piping specifically attributable to demand from new development, and is calculated as a cost per gallon (the quotient of capital cost and total added capacity in mgd).

Local improvement impact fees (for in-town facilities that meet in-town demand) are collected locally and retained by each municipality. Farmington, Elkins and Greenland local improvements fees are based on the cost of facilities needed to meet demand from new development, as defined by wastewater facility plans. The Fayetteville local improvements fee is based on the cost of current capital facilities service provision (the unit cost of the current inventory). The Fayetteville local fee is calculated to exclude the value of in-town capacity used to meet demand from other localities. (Part of the Fayetteville system serves to transmit influent from other areas of the district to the treatment plant. The cost of that shared capacity is excluded from the Fayetteville local fee.)

Table 11 shows calculation of the per-unit cost of wastewater capital facilities.

Table 11

<b>WASTEWATER COST TO MEET DEMAND FROM NEW DEVELOPMENT</b>					
Cost of Capital Facilities Service Provision (per EDU)					
	System Total	Fayetteville	Farmington	Elkins	Greenland
<b>System Improvements</b>					
WSIP Cost of Capacity for New Development	\$116,377,426				
New Capacity Created (mgd)	10.0				
WSIP Cost per Gallon	\$11.64				
GPD per EDU	188				
Cost per Service Unit	\$2,183	\$2,183	\$2,183	\$2,183	\$2,183
<b>Local Improvements (in-town collection system)</b>					
Master Plan Projects		NA	\$1,551	\$2,447	\$2,701
Incremental Cost (cost of existing capacity)		\$1,385	NA	NA	NA
Cost per Service Unit		\$1,385	\$1,551	\$2,447	\$2,701

Source – For system improvements, cost of capacity for new development is from Table 49. GPD per EDU is from Table 6. For local improvements, cost calculated as shown in Table 13 through Table 16.

The service standard for wastewater facilities is shown below, expressed as a dollar-value per unit. A dollar-denominated service standard is useful for wastewater because of the dissimilar components that make up the system.

Table 12

<b>WASTEWATER LEVEL OF SERVICE STANDARD</b>				
Wastewater Impact Fee				
	Fayetteville	Farmington	Elkins	Greenland
System Improvements	\$2,183	\$2,183	\$2,183	\$2,183
Local Improvements (in-town collection system)	\$1,385	\$1,551	\$2,447	\$2,701

Source – LOS is cost of demand from new development from Table 11.

For local facilities, calculation of the unit-cost of service is detailed in Table 13 through Table 16, below.

Table 13 shows calculation of the cost of the Fayetteville (in-town) collection system. Cost excludes the value of capacity attributable to demand from Elkins. (The Fayetteville system serves as part of the wastewater transmission system, to convey influent from certain outlying areas to the treatment plant.)

Table 13

<b>FAYETTEVILLE LOCAL IMPROVEMENTS COST</b>						
Estimated Current Value of Wastewater Collection System (after completion of WSIP)						
	System Capacity				Fayetteville Local Capacity	Total
	Farmington	Elkins	Greenland	Other		
<b>Fayetteville Collection System (current inventory)</b>						
Gravity and Force Mains (greater than 8")	\$0	\$460,000	\$0	\$0	\$83,559,809	\$84,019,809
Pumps	\$0	\$0	\$0	\$0	\$20,000,000	\$20,000,000
Total	\$0	\$460,000	\$0	\$0	\$103,559,809	\$104,019,809
Service Units (EDU, 2030)					74,798	
<b>Cost per Service Unit (EDU)</b>					\$1,385	

Source – Wastewater engineering staff advise that the Elkins share of demand is equivalent to 4,000 feet of 10 inch gravity sewer line. Staff also advise that other areas of the wastewater district make use of in-city Fayetteville collection system capacity, but after completion of the WSIP project the amount will be insignificant and immeasurable. The value of capacity attributable to Fayetteville is the difference between total cost and Elkins cost. Inventory value is from Table 51 and Table 52. Elkins cost share is calculated based on unit cost from the Fayetteville capital facilities inventory. Fayetteville service units from Table 8. Elkins service units from Table 15.

The Fayetteville collection system has excess capacity, in an amount not specifically known. Because of this, the per-unit cost is calculated based on build-out total service units. Also, because capacity allocated to Elkins is estimated by wastewater engineering staff to be adequate to meet demand through build-out, Elkins cost is calculated based on build-out demand.

## Wastewater

Farmington local improvements cost is calculated in Table 14, based on a recently completed facility plan. The plan specifies requisite capacity expansion improvements, needed in addition to those that will be provided by the WSIP project. Table 14 shows average cost per new development unit.

Table 14

<b>FARMINGTON LOCAL IMPROVEMENTS COST</b>	
Wastewater Improvements for New Development	
Capacity Expansion Capital Facilities Cost	\$7,586,000
Total New Development (dwelling units, build-out)	4,890
<b>Cost per Service Unit (EDU)</b>	<b>\$1,551</b>

Source – *Engineering Study, Sanitary Sewer System, for the City of Farmington Arkansas*, EGIS Engineering, March 2007. Cost is for local improvements, greater than 8" (8" lines and smaller are assumed to be provided by developers).

Elkins and Greenland local improvements cost is shown in Table 15 and Table 16. Cost is based on facility plans that define capacity expansion projects specifically attributable to demand from new development.

Table 15

<b>ELKINS LOCAL IMPROVEMENTS COST</b>	
Wastewater Improvements for New Development	
Description	Cost of Added Capacity
18" Sewer Main to Baldwin	\$729,600
12" Force Main to Baldwin	\$602,438
Parallel Gravity Sewer Main and Pump Station #1 Upgrade	\$3,113,600
Four Collection System Pump Stations and Force Mains	\$641,750
Total Cost	\$5,087,388
Total New Service Units	2,079
<b>Cost per Service Unit</b>	<b>\$2,447</b>

Source – McClelland Consulting Engineers, *Elkins Preliminary Cost Estimates Water and Wastewater Master Plan*, 9/6/07, page 3. Facility plan design capacity is 3000 EDU (page 1 of the facility plan report). Total new service units is calculated as facility plan capacity, less existing and in-process units (921 EDU, from Table 8).

Table 16

<b>GREENLAND LOCAL IMPROVEMENTS COST</b>	
Wastewater Improvements for New Development	
Description	Cost of Added Capacity
18" Sewer Main to Fayetteville	\$773,995
12" Force Main to Fayetteville	\$560,940
Gravity Sewer Main and Lift Station #18 Upgrade	\$1,190,780
Three Collection System Lift Stations and Force Mains	\$1,568,375
Total Cost	\$4,094,090
Total New Service Units	1,516
<b>Cost per Service Unit</b>	<b>\$2,701</b>

Source – McClelland Consulting Engineers, *Greenland Wastewater Master Plan*, December 2006, page 7. Total new service units as defined in the facility plan, and is calculated as shown in Table 54. Design capacity is defined in the master plan in terms of total units at build-out (carrying capacity), and not based on a projected growth rate or rate analysis.

## Revenue Credits & Net Cost per Service Unit

The previous section defines cost to meet demand from new development – capital facilities total cost and cost per service unit (the “gross” impact fee).

This section defines the net payable impact fee, which is a reduced amount to account for payments by new development for system facilities funded by impact fees (future sales tax bond principal payments), and payments by new development for local facilities that serve existing development (future bond principal payments for Greenland existing debt).

The rationale underlying calculation of impact fee revenue credits, detailed on page 9, can be summarized as follows:

- New development should not pay for a level of service higher than that provided existing development.
- New development should not pay more than its proportionate share of the cost of requisite new capacity (including consideration of other capital facilities revenue).
- Credit may be appropriate in certain cases to offset future, dedicated capital facility capacity funding attributable to new development, or future payments by new development used to retire debt for existing service provision.

As part of this analysis, a review of wastewater facilities funding was conducted to identify dedicated revenue that might reliably supplement impact fees, and other funding that could potentially yield revenue credits. That review is summarized as follows:

- The wastewater systems do not anticipate future external funding (grants or similar) dedicated to capacity expansion of facilities of the type planned to be funded by impact fees.
- System improvements for new development (the WSIP project) are planned to be funded as shown below (*Table 17*). New development will contribute part of future bond debt service payments by means of sales tax. Credit for those future payments is calculated as shown in *Table 18*. Other WSIP project funding is not attributable to new development, and is not subject to impact fee credit.

Table 17

<b>WSIP FUNDING SUMMARY</b>		
Funding Plan for the Wastewater System Improvement Project (as of 9/30/07)		
	Sub-Total	Total
<b>Sales Tax Bonds</b>		
2005A	\$20,610,000	
2005B	\$41,275,000	
2006A	\$25,000,000	
2006RLF	\$20,000,000	
2007	\$14,340,000	\$121,225,000
<b>Other Funding Sources</b>		
Transfer from Water/Sewer Fund	\$6,890,000	
City Capital Program	\$1,613,000	
Sale of Land (WSIP plant site)	\$1,100,000	
Impact Fee Fund Balance	\$2,500,000	\$12,103,000
<b>Sales Tax Bond Proceeds On-hand (redeemed)</b>	\$47,355,701	\$47,355,701
<b>Total</b>		<b>\$180,683,701</b>

Source – Fayetteville Finance Director.

- Local improvements for new development are expected to be paid primarily by impact fees, and not by user fee revenue.
- Certain facilities are expected to be obtained by means of exaction or negotiated contribution – collection lines 8” in diameter and less, for example. Cost for this component of new development capacity is excluded from impact fee calculations.
- To the extent that other facilities are obtained at no cost from new development, impact fee credit will be calculated on a case-specific basis, as agreements to secure the capacity are finalized.



The credit for future payments by new development for sales tax bond principal is calculated as the present value of the local share of the total bond principal payments – i.e. the share of total sales tax revenue generated in Fayetteville, Farmington, Elkins and Greenland.

Table 18

<b>CREDIT FOR SALES TAX BOND PRINCIPAL PAYMENTS</b>			
Wastewater Facilities System Fee Revenue Credit (per EDU)			
	Total Principal Payment	Local Share	Non-Local Share
<b>Sales Tax Generation (% of total)</b>		57.4%	42.6%
<b>Sales Tax Bond Principal Payment</b>			
2007	\$6,740,000	\$3,868,760	\$2,871,240
2008	\$9,867,143	\$5,663,740	\$4,203,403
2009	\$10,147,143	\$5,824,460	\$4,322,683
2010	\$10,437,143	\$5,990,920	\$4,446,223
2011	\$10,742,143	\$6,165,990	\$4,576,153
2012	\$11,057,143	\$6,346,800	\$4,710,343
2013	\$11,387,143	\$6,536,220	\$4,850,923
2014	\$11,507,143	\$6,605,100	\$4,902,043
2015	\$4,027,500	\$2,311,785	\$1,715,715
2016	\$4,222,500	\$2,423,715	\$1,798,785
2017	\$4,425,000	\$2,539,950	\$1,885,050
2018	\$4,635,000	\$2,660,490	\$1,974,510
2019	\$4,845,000	\$2,781,030	\$2,063,970
2020	\$5,060,000	\$2,904,440	\$2,155,560
2021	\$5,225,000	\$2,999,150	\$2,225,850
2022	\$1,255,000	\$720,370	\$534,630
2023	\$1,315,000	\$754,810	\$560,190
2024	\$1,385,000	\$794,990	\$590,010
2025	\$1,440,000	\$826,560	\$613,440
2026	\$1,505,000	\$863,870	\$641,130
Total	\$121,225,000	\$69,583,150	\$51,641,850
<b>Impact Fee Revenue Credit (principal payment per EDU)</b>			
2007			
2008		\$112.55	
2009		\$113.31	
2010		\$114.09	
2011		\$114.94	
2012		\$115.82	
2013		\$116.76	
2014		\$115.49	
2015		\$39.57	
2016		\$40.61	
2017		\$41.66	
2018		\$42.71	
2019		\$43.70	
2020		\$44.67	
2021		\$45.15	
2022		\$10.62	
2023		\$10.89	
2024		\$11.22	
2025		\$11.42	
2026		\$11.68	
Total		\$1,156.86	
<b>Net Present Value (4.24% discount rate)</b>		\$936.14	

Source – Total principal payment from Fayetteville Finance Director. The local share is the proportion of City of Fayetteville total sales tax revenue, attributable to residents of Fayetteville, Farmington, Elkins and Greenland. The non-local share is attributable to out-of-area residents. Sales tax contributions are as defined by the *Fayetteville Sales Tax Community Contributions Study*, Sam M. Walton College of Business, University of Arkansas, July 8, 2005, Table 4. The revenue credit is calculated as the present value of the quotient of the local tax contribution, and total service units for Fayetteville, Farmington, Elkins and Greenland, from Table 8. The discount rate is the three month average (May, June and July) of the state and local bond index from the Federal Reserve Board website (H15, selected interest rates, #15 state and local bond interest rates), as of June 2007.

Wastewater

The City of Greenland wastewater revenue credit for remaining debt principal payments for existing facilities is calculated as follows:

Table 19

<b>GREENLAND LOCAL IMPROVEMENTS CREDIT</b>			
Credit for Current Debt Principal Payments (1998 Greenland Wastewater Bond)			
	Annual Principal Payments	Service Units	Cost per Service Unit
2001	\$5,000		
2002	\$11,000		
2003	\$11,000		
2004	\$12,000		
2005	\$12,000		
2006	\$13,000		
2007	\$13,000	402	\$32.33
2008	\$14,000	419	\$33.41
2009	\$15,000	437	\$34.35
2010	\$15,000	455	\$32.96
2011	\$16,000	474	\$33.74
2012	\$17,000	494	\$34.40
2013	\$18,000	515	\$34.96
2014	\$18,000	537	\$33.55
2015	\$19,000	559	\$33.98
2016	\$20,000	583	\$34.32
2017	\$21,000	607	\$34.59
2018	\$23,000	633	\$36.35
2019	\$24,000	659	\$36.40
Total	\$297,000		\$445.33
Net Present Value (4.24% discount rate)			\$349.91

Source – City of Greenland, Ordinance 183, 52/99. (Page 22 of bond information package from Williams & Anderson,6/16/99.) The fee reduction is the present value of the quotient of annual principal payments and total service units. Discount rate from Table 18.

Net cost per service unit is calculated as follows.

Table 20

<b>WASTEWATER NET COST PER SERVICE UNIT</b>				
Net Cost of Wastewater Capital Facility Capacity for New Development				
	Fayetteville	Farmington	Elkins	Greenland
<b>System Improvements</b>				
Cost per Service Unit	\$2,183	\$2,183	\$2,183	\$2,183
Less - Future Sales Tax Bond Principal Payments	(\$936)	(\$936)	(\$936)	(\$936)
Net Cost per Service Unit	\$1,247	\$1,247	\$1,247	\$1,247
<b>Local Improvements (in-town collection system)</b>				
Cost per Service Unit	\$1,385	\$1,551	\$2,447	\$2,701
Less - Future Bond Principal Payments	\$0	\$0	\$0	(\$350)
<b>Net Cost per Service Unit</b>	<b>\$1,385</b>	<b>\$1,551</b>	<b>\$2,447</b>	<b>\$2,351</b>

Source – Cost per Service Unit from Table 11. Revenue credits are from Table 18 and Table 19.

## Net Cost Schedule and Total Impact Fee Revenue

The maximum wastewater impact fees that could be charged by participating localities, based on data, methodology and assumptions in this analysis, are shown in Table 21 to Table 26.

Table 21

<b>WASTEWATER NET COST SCHEDULE - SYSTEM IMPROVEMENTS</b>						
Maximum Potential Impact Fees for System Facilities (fee revenue remitted to City of Fayetteville)						
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount			
			Fayetteville	Farmington	Elkins	Greenland
Net Cost per Service Unit (EDU)			\$1,247	\$1,247	\$1,247	\$1,247
Single-Family	dwelling unit	1.00	\$1,247	\$1,247	\$1,247	\$1,247
Multi-Family	dwelling unit	0.71	\$887	\$887	\$887	\$887
Mobile Home	dwelling unit	1.00	\$1,247	\$1,247	\$1,247	\$1,247
Nonresidential						
5/8" x 3/4" meter	water meter	1.00	\$1,247	\$1,247	\$1,247	\$1,247
1" meter	water meter	2.50	\$3,117	\$3,117	\$3,117	\$3,117
1 1/2" meter	water meter	5.00	\$6,235	\$6,235	\$6,235	\$6,235
2" meter	water meter	8.00	\$9,976	\$9,976	\$9,976	\$9,976
3" meter	water meter	16.00	\$19,951	\$19,951	\$19,951	\$19,951
4" meter	water meter	25.00	\$31,174	\$31,174	\$31,174	\$31,174
6" meter	water meter	50.00	\$62,348	\$62,348	\$62,348	\$62,348
8" meter	water meter	80.00	\$99,757	\$99,757	\$99,757	\$99,757
10" meter	water meter	115.00	\$143,401	\$143,401	\$143,401	\$143,401

Source – Net cost per service unit from Table 20. Service unit generation rates from Table 9.

Table 22

<b>WASTEWATER NET COST SCHEDULE - LOCAL IMPROVEMENTS</b>						
Maximum Potential Impact Fees for In-town Facilities (fee revenue remitted to each named city)						
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount			
			Fayetteville	Farmington	Elkins	Greenland
Net Cost per Service Unit (EDU)			\$1,385	\$1,551	\$2,447	\$2,351
Single-Family	dwelling unit	1.00	\$1,385	\$1,551	\$2,447	\$2,351
Multi-Family	dwelling unit	0.71	\$985	\$1,103	\$1,740	\$1,672
Mobile Home	dwelling unit	1.00	\$1,385	\$1,551	\$2,447	\$2,351
Nonresidential						
5/8" x 3/4" meter	water meter	1.00	\$1,385	\$1,551	\$2,447	\$2,351
1" meter	water meter	2.50	\$3,461	\$3,878	\$6,117	\$5,877
1 1/2" meter	water meter	5.00	\$6,923	\$7,757	\$12,234	\$11,755
2" meter	water meter	8.00	\$11,076	\$12,411	\$19,575	\$18,808
3" meter	water meter	16.00	\$22,152	\$24,821	\$39,150	\$37,615
4" meter	water meter	25.00	\$34,613	\$38,783	\$61,172	\$58,774
6" meter	water meter	50.00	\$69,226	\$77,566	\$122,345	\$117,548
8" meter	water meter	80.00	\$110,762	\$124,106	\$195,752	\$188,077
10" meter	water meter	115.00	\$159,220	\$178,403	\$281,393	\$270,360

Source – Net cost per service unit from Table 20. Service unit generation rates from Table 9.

Wastewater

Table 23

<b>WASTEWATER NET COST SCHEDULE - SYSTEM &amp; LOCAL IMPROVEMENTS</b>						
Maximum Potential System and In-Town Facilities Impact Fee (total cost to fee payer)						
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount			
			Fayetteville	Farmington	Elkins	Greenland
Net Cost per Service Unit (EDU)			\$2,631	\$2,798	\$3,694	\$3,598
Single-Family	dwelling unit	1.00	\$2,631	\$2,798	\$3,694	\$3,598
Multi-Family	dwelling unit	0.71	\$1,872	\$1,990	\$2,627	\$2,559
Mobile Home	dwelling unit	1.00	\$2,631	\$2,798	\$3,694	\$3,598
<b>Nonresidential</b>						
5/8" x 3/4" meter	water meter	1.00	\$2,631	\$2,798	\$3,694	\$3,598
1" meter	water meter	2.50	\$6,579	\$6,996	\$9,235	\$8,995
1 1/2" meter	water meter	5.00	\$13,157	\$13,991	\$18,469	\$17,990
2" meter	water meter	8.00	\$21,052	\$22,386	\$29,551	\$28,783
3" meter	water meter	16.00	\$42,104	\$44,773	\$59,102	\$57,567
4" meter	water meter	25.00	\$65,787	\$69,957	\$92,347	\$89,948
6" meter	water meter	50.00	\$131,574	\$139,915	\$184,693	\$179,896
8" meter	water meter	80.00	\$210,519	\$223,864	\$295,509	\$287,834
10" meter	water meter	115.00	\$302,621	\$321,804	\$424,794	\$413,762

Source – Net cost per service unit is the total of system and local improvements, from Table 20. Service unit generation rates from Table 9.

Table 24, Table 25 and Table 26 show optional, variable rate single-family wastewater impact fees.

Table 24

<b>WASTEWATER SINGLE-FAMILY VARIABLE RATE NET COST - SYSTEM IMPROVEMENTS</b>						
Maximum Potential Impact Fees for System Facilities (fee revenue remitted to City of Fayetteville)						
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount			
			Fayetteville	Farmington	Elkins	Greenland
Net Cost per Service Unit (EDU)			\$1,247	\$1,247	\$1,247	\$1,247
Single-Family, up to 1,300 square feet	dwelling unit	0.82	\$1,028	\$1,028	\$1,028	\$1,028
Single-Family, 1,301 to 1,700 square feet	dwelling unit	1.04	\$1,299	\$1,299	\$1,299	\$1,299
Single-Family, 1,701 to 2,300 square feet	dwelling unit	1.18	\$1,466	\$1,466	\$1,466	\$1,466
Single-Family, more than 2,300 square feet	dwelling unit	1.32	\$1,643	\$1,643	\$1,643	\$1,643

Source – Net cost per service unit from Table 20. Service unit generation rates from Table 9.

Table 25

<b>WASTEWATER SINGLE-FAMILY VARIABLE RATE NET COST - LOCAL IMPROVEMENTS</b>						
Maximum Potential Impact Fees for In-town Facilities (fee revenue remitted to each named city)						
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount			
			Fayetteville	Farmington	Elkins	Greenland
Net Cost per Service Unit (EDU)			\$1,385	\$1,551	\$2,447	\$2,351
Single-Family, up to 1,300 square feet	dwelling unit	0.82	\$1,141	\$1,279	\$2,017	\$1,938
Single-Family, 1,301 to 1,700 square feet	dwelling unit	1.04	\$1,442	\$1,616	\$2,549	\$2,449
Single-Family, 1,701 to 2,300 square feet	dwelling unit	1.18	\$1,628	\$1,824	\$2,877	\$2,764
Single-Family, more than 2,300 square feet	dwelling unit	1.32	\$1,825	\$2,045	\$3,225	\$3,099

Source – Net cost per service unit from Table 20. Service unit generation rates from Table 9.

Table 26

<b>WASTEWATER SINGLE-FAMILY VARIABLE RATE NET COST - SYSTEM &amp; LOCAL IMPROVEMENTS</b>						
Maximum Potential System and In-Town Facilities Impact Fee (total cost to fee payer)						
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount			
			Fayetteville	Farmington	Elkins	Greenland
Net Cost per Service Unit (EDU)			\$2,631	\$2,798	\$3,694	\$3,598
Single-Family, up to 1,300 square feet	dwelling unit	0.82	\$2,169	\$2,307	\$3,045	\$2,966
Single-Family, 1,301 to 1,700 square feet	dwelling unit	1.04	\$2,742	\$2,915	\$3,848	\$3,748
Single-Family, 1,701 to 2,300 square feet	dwelling unit	1.18	\$3,094	\$3,290	\$4,343	\$4,230
Single-Family, more than 2,300 square feet	dwelling unit	1.32	\$3,468	\$3,688	\$4,868	\$4,742

Source – Net cost per service unit is the total of system and local improvements, from Table 20. Service unit generation rates from Table 9.

Wastewater

Maximum potential impact fee revenue that could accrue over the next ten years if fees are assessed at the rates shown above, and if growth occurs as projected, is as follows:

Table 27

<b>WASTEWATER MAXIMUM POTENTIAL IMPACT FEE REVENUE (NEXT 10 YEARS)</b>									
System and Local Impact Fees									
Description	Fayetteville Revenue						Farmington Revenue (local improv.)	Elkins Revenue (local improv.)	Greenland Revenue (local improv.)
	System Improvements				Local Improvements	Total			
	Fayetteville	Farmington	Elkins	Greenland	Fayetteville				
	(point of collection)						(point of collection)		
<b>Net Cost per Servic</b>	\$1,247	\$1,247	\$1,247	\$1,247	\$1,385		\$1,551	\$2,447	\$2,351
<b>Potential Annual Revenue</b>									
2008	\$1,211,441	\$56,710	\$33,230	\$21,092	\$1,345,075	\$2,667,547	\$70,552	\$65,207	\$39,765
2009	\$1,236,763	\$58,479	\$34,192	\$21,979	\$1,373,190	\$2,724,602	\$72,753	\$67,094	\$41,438
2010	\$1,262,613	\$60,304	\$35,181	\$22,903	\$1,401,892	\$2,782,893	\$75,023	\$69,035	\$43,181
2011	\$1,289,005	\$62,185	\$36,199	\$23,867	\$1,431,195	\$2,842,450	\$77,363	\$71,033	\$44,997
2012	\$1,315,947	\$64,125	\$37,247	\$24,870	\$1,461,109	\$2,903,299	\$79,777	\$73,089	\$46,889
2013	\$1,343,453	\$66,125	\$38,325	\$25,916	\$1,491,650	\$2,965,470	\$82,265	\$75,204	\$48,861
2014	\$1,371,534	\$68,188	\$39,434	\$27,006	\$1,522,828	\$3,028,991	\$84,832	\$77,380	\$50,916
2015	\$1,400,202	\$70,316	\$40,575	\$28,142	\$1,554,658	\$3,093,894	\$87,478	\$79,619	\$53,058
2016	\$1,429,469	\$72,509	\$41,749	\$29,326	\$1,587,154	\$3,160,208	\$90,208	\$81,923	\$55,290
2017	\$1,459,348	\$74,771	\$42,957	\$30,559	\$1,620,329	\$3,227,965	\$93,022	\$84,294	\$57,615
<b>Total</b>	<b>\$13,319,777</b>	<b>\$653,712</b>	<b>\$379,088</b>	<b>\$255,662</b>	<b>\$14,789,079</b>	<b>\$29,397,319</b>	<b>\$813,272</b>	<b>\$743,877</b>	<b>\$482,010</b>
<b>Annual New Service Units (EDU)</b>									
2008	972	45	27	17		1,061			
2009	992	47	27	18		1,084			
2010	1,013	48	28	18		1,107			
2011	1,034	50	29	19		1,132			
2012	1,055	51	30	20		1,157			
2013	1,077	53	31	21		1,182			
2014	1,100	55	32	22		1,208			
2015	1,123	56	33	23		1,234			
2016	1,146	58	33	24		1,262			
2017	1,170	60	34	25		1,289			
<b>Total</b>	<b>10,682</b>	<b>524</b>	<b>304</b>	<b>205</b>		<b>11,715</b>			

Source – Net cost per service unit from Table 20. Total service units from Table 8, calculated each year as the difference between current and prior year total units.

## Wastewater Capital Facilities Plan

The construction of system improvements needed to meet demand from new development is now underway and nearing completion. Cost of the work is summarized as follows.

Table 28

<b>WSIP CAPITAL IMPROVEMENT PLAN</b>	
System Improvements for the Wastewater Impact Fee	
	WSIP Major Construction Contract Summary
West Line	\$39,521,862
WWTP	\$64,242,418
Noland	\$17,276,880
East Line	\$24,030,080
Engineering	\$23,314,236
Legal Admin	\$810,000
Misc & Contingency	\$2,567,837
Easements	\$1,795,000
Broyles Road (WWTP road)	\$5,036,687
Sub-Total	\$178,595,000
Farmington - Fayetteville Projects	\$7,495,684
TOTAL	\$186,090,684
Less - Farmington Cost Share	(\$5,406,983)
Net Fayetteville Cost	\$180,683,701

Source – WSIP cost from *Fayetteville WSIP Major Construction Contracts Summary*, dated 1/3/07, from Fayetteville Water/Wastewater Director. Farmington cost share from *Contracts Summary, Cost Breakdown by WSIP Component*.

Requisite local improvements for Farmington, Elkins and Greenland are specified by facility plans shown in Table 14, Table 15 and Table 16. The new development share of cost in each case is equal to or greater than projected impact fee revenue – meaning that collected impact fees can be expected to be fully utilized.

Fayetteville local improvements are defined by the 2006 Fayetteville Wastewater CIP, summarized below. The CIP includes cost attributable to new development in an amount equal to impact fees collected over the next five or six years. (The new development share of cost is \$7.9 million; five-year impact fee revenue beginning in 2008 is about \$7.0 million). The CIP is updated every two years, and the CIP is expected to continue to fully utilize all available impact fee revenue.

Table 29

<b>WASTEWATER IMPROVEMENTS FOR NEW DEVELOPMENT</b>					
Summary of City of Fayetteville 2006 Wastewater CIP (part, excluding WSIP)					
	CIP Cost	Cost Attributable to New Capacity	Deferred Cost	Deferred Cost Attributable to New Capacity	Total Cost of Capacity for New Development
<b>Funded Projects</b>					
Wastewater Treatment Improvements	\$810,001	\$53,000	\$0	\$0	\$53,000
Sewer Improvements	\$6,666,001	\$1,165,500	\$0	\$0	\$1,165,500
Water & Sewer Service Improvements	\$662,500	\$0	\$0	\$0	\$0
Budgeted Capital Projects	\$343,527	\$12,750	\$0	\$0	\$12,750
Sub-Total	\$8,482,029	\$1,231,250	\$0	\$0	\$1,231,250
<b>Unfunded Projects</b>					
Wastewater Treatment Improvements	\$1,482,000	\$16,500	\$0	\$0	\$16,500
Sewer Improvements	\$13,847,500	\$5,277,925	\$10,539,500	\$1,420,500	\$6,698,425
Sub-Total	\$15,329,500	\$5,294,425	\$10,539,500	\$1,420,500	\$6,714,925
<b>TOTAL</b>	<b>\$23,811,529</b>	<b>\$6,525,675</b>	<b>\$10,539,500</b>	<b>\$1,420,500</b>	<b>\$7,946,175</b>

Source – Fayetteville planning staff. Deferred cost is for partially funded, unfunded projects.

## **WATER**

The previous chapter shows calculation of the wastewater impact fee. This chapter details calculation of water impact fees for areas served by Fayetteville-owned water facilities (most of the system), as well as fees for the separately owned, Elkins in-town distribution system.

Like the wastewater fee, the water impact fee has two components – a fee for system improvements, and one for locally owned improvements that serve in-town demand. System improvements revenue is owned by, and remitted to, the City of Fayetteville (the provider of system capacity). Local improvements revenue is owned by the local service provider – Fayetteville or Elkins

The system improvements fee pays for the cost of water source, storage and supply. The local improvements fee pays the cost of in-town distribution facilities.

### **Service Area**

The water system serves Fayetteville, Farmington, Elkins, Greenland, West Fork, Mt. Olive, Wheeler, White River, and parts of Johnson and Washington County. Impact fees are here calculated for Fayetteville-owned facilities (most of the system), and for Elkins in-town facilities. (Elkins is a wholesale customer with separately owned in-town facilities).

The local improvement component of the water impact fee is assessed by means of two service areas (illustrated in Figure 2) – one corresponding to areas served by Fayetteville facilities, and one for Elkins. The system improvements fee is assessed at the same rate by property type in both service areas, because the same service standard prevails in each, and because the same service is provided (water source, storage and distribution). Such an approach is consistent with the integrated nature of the facilities (redundancy is provided by district-wide facilities and capacity), and with the operations, management and capital facilities planning approach employed by the service provider (Fayetteville Water/Wastewater management and engineering staff). Local improvement fees are assessed at different rates in each service area because the local impact fee accounts for different service standards and different quantities of in-place facilities in each area.



## Service Demand

Service demand is quantified in terms of the number of equivalent dwelling units (EDU) projected to connect to the system. Residential equivalent demand is used as a way a way to express demand for various dissimilar property types, in terms of a common measure (an “EDU”). This section shows the calculation of current and future demand units. Demand equivalency (the number of service units for each impact fee property type) is calculated in the next section.

The process by which the quantity of current and future service units is calculated is as follows: estimate current single-family demand and, by means of that, current total service units (Table 30); estimate the future population growth rate (Table 31); and then calculate annual new service units as the product of prior year units and the growth rate (Table 32).

Current total service units are calculated as show in Table 30.

Table 30

<b>CURRENT WATER DEMAND (SERVICE UNITS, 2006)</b>			
Water Impact Fee			
	District Total (excluding Elkins)	Elkins	Total
<b>Single Family Capacity Demand (2006, annual average)</b>			
Single Family Water Demand (gallons)	1,385,031,100		
Days in Year	365		
# Single Family Connections (active, December 2006)	19,170		
GPD per Single Family Connection (EDU)	198		
<b>Number of Service Unit</b>			
Total Water Demand (gallons, 2006)	4,177,945,500	52,526,700	4,230,472,200
Days in Year	365	365	
GPD per EDU	198	198	
<b>Total Service Units (EDU)</b>	<b>57,826</b>	<b>727</b>	<b>58,553</b>

Source – Water demand (gallons) and number of connections from City of Fayetteville billing data. GPD per EDU is GPD per single-family unit. GPD per single-family connection and number of service units by area are calculated as discussed below.

Single-family demand, expressed in terms of gallons per day (GPD) per EDU, is calculated as the quotient of average annual single-family consumption, number of days in the year and number of single-family connections. Total service units is the quotient of annual water demand, number of days in the year and GPD per EDU.

Population growth is projected based on facility plans, or projections by the Northwest Arkansas Regional Planning Commission, as follows:

Table 31

<b>POPULATION PROJECTIONS</b>							
Water Impact Fee							
	Population						Avg. Ann. Rate
	2005	2010	2015	2020	2025	2030	
<b>Water Service Population</b>							
Fayetteville	71,734	81,451	91,167	100,884	110,600	120,317	2.1%
Farmington	4,476	5,511	6,545	7,579	8,613	9,648	3.1%
Greenland	1,226	1,668	2,109	2,551	2,992	3,434	4.2%
Johnson	3,226	4,087	4,948	5,809	6,670	7,531	3.4%
West Fork	2,287	2,510	2,733	2,956	3,179	3,402	1.6%
Goshen	927	1,037	1,148	1,259	1,369	1,480	1.9%
Sub-Total	83,876	96,264	108,650	121,038	133,423	145,812	2.2%
Elkins	2,223	2,686	3,148	3,611	4,074	4,536	2.9%
Total	86,099	98,950	111,798	124,649	137,497	150,348	2.3%
Washington County	188,006	218,296	244,194	270,091	295,989	321,887	2.2%

Source – Table 7 and Northwest Arkansas Regional Planning Commission, *Northwest Arkansas Regional Transportation Study*, page 18, April 2006, for West Fork. Projections for certain parts of the district – Mt. Olive, Wheeler, White River, growth area and the RDA – are not shown because data is not separately available.

Annual new service units are projected as shown below. The projection horizon is based on the water master plan design year of 2023.

Table 32

<b>PROJECTED WATER SERVICE DEMAND (SERVICE UNITS)</b>			
Water Impact Fee			
	Service Area Total		
	District Total (excluding Elkins)	Elkins	Total
<b>Projected Average Annual Growth</b>	2.2%	2.9%	
<b>Service Units (EDU)</b>			
2006	57,826	727	58,553
2007	59,120	748	59,868
2008	60,442	770	61,212
2009	61,794	792	62,586
2010	63,176	815	63,991
2011	64,589	838	65,427
2012	66,033	863	66,896
2013	67,510	888	68,398
2014	69,020	913	69,933
2015	70,564	940	71,504
2016	72,142	967	73,109
2017	73,755	995	74,750
2018	75,405	1,024	76,429
2019	77,091	1,053	78,145
2020	78,816	1,084	79,900
2021	80,578	1,115	81,694
2022	82,381	1,148	83,528
2023	84,223	1,181	85,404

Source – 2006 service units from Table 30. Average annual growth rate is the population growth rate from Table 31. Annual service units is calculated as the product of prior total units and the growth rate.

## Demand Equivalency

Demand equivalency is the means by which average service demand attributable to each property type is calculated (the “service unit generation rate,” or number of service units for a unit of each property type). Demand equivalency is summarized as follows:

Table 33

<b>DEMAND EQUIVALENCY TABLE</b>		
Wastewater and Water Impact Fees		
Property Type	Meter Capacity (gpm)	Service Unit Generation Rate (EDU)
<b>Residential (flat rate option)</b>		
Single-Family	na	1.00
Multi-Family	na	0.71
Mobile Home	na	1.00
<b>Single-Family (variable rate option)</b>		
Single-Family, up to 1,300 square feet	na	0.82
Single-Family, 1,301 to 1,700 square feet	na	1.04
Single-Family, 1,701 to 2,300 square feet	na	1.18
Single-Family, more than 2,300 square feet	na	1.32
<b>Nonresidential</b>		
5/8" x 3/4" meter	10	1.00
1" meter	25	2.50
1 1/2" meter	50	5.00
2" meter	80	8.00
3" meter	160	16.00
4" meter	250	25.00
6" meter	500	50.00
8" meter	800	80.00
10" meter	1,150	115.00

Source – Table 9.

Calculation methodology for service unit generation rates is discussed in the wastewater chapter of this report, on page 14. Nonresidential rates are based on water meter size, and are calculated as the ratio of meter capacity for each property type to that of single-family. Residential service unit generation rates are based on household size.

In Table 33, note that there are two options for the determination of single-family service unit generation rates – average and variable rate demand. Average residential demand is differentiated only in terms of property type (single-family, multifamily and mobile home). Variable rate single-family demand is however differentiated based on square footage – smaller homes are assigned reduced service unit generation rates based on evidence that, on average, smaller units show smaller household size. This approach potentially mitigates housing affordability impact because smaller units are assessed a reduced impact fee.

## Capital Facilities Need & Level of Service

Table 34 shows the per-unit cost of water capital facilities service provision:

Table 34

<b>COST TO MEET DEMAND FROM NEW DEVELOPMENT</b>		
Unit Cost of Capital Facilities Service Provision (per EDU)		
	District Total (excluding Elkins)	Elkins
<b>System Improvements</b>		
Cost per Service Unit	\$2,315	\$2,315
<b>Local Improvements (in-town distribution system)</b>		
Cost per Service Unit	\$658	\$1,204

Source – cost per service unit from Table 36.

Methodology used to quantify the unit cost of service is based on information resources made available to support this analysis. For system and local improvements (excluding Elkins) cost is calculated based on “end-state” analysis, as the quotient of the cost of design year capacity (existing facilities plus future master plan projects) and design year service units.

The allocation of cost between system and local service provision is also estimated. Local improvements are assumed to be lines greater than 8 inches and 14 inches or less in diameter. Water lines 8 inches or smaller are assumed to be provided by developers, and are not included in the impact fee analysis. Lines larger than 14 inches in diameter are included as part of the system improvements impact fee.

For Elkins local improvements, the cost of capacity needed to meet demand from new development is defined by a water master plan. Unit cost is therefore calculated as the quotient of new development capital facilities cost and design service units.

End-state analysis is not an uncommon approach. It is particularly useful for this analysis because it is compatible with master plan demand planning assumptions. The water master plan aggregates current and future capital facility demand so as to define total cost needed to serve design year capacity (it is essentially an end-state analysis). One possible shortcoming of an end-state approach is that it can understate the actual cost of service, if marginal cost is higher than current average cost. The only solution to this potential problem is definition of an accurate master plan that allocates cost according to beneficiary (cost attributable to new vs. existing service provision).

The service standard for water facilities is summarized in Table 35 on the following page, expressed as a dollar-value per unit. A dollar-denominated service standard is useful for water because of the dissimilar components that make up the system.

Table 35

<b>WATER LEVEL OF SERVICE STANDARD</b>		
Water Impact Fee		
	District Total (excluding Elkins)	Elkins
System Improvements	\$2,315	\$2,315
Local Improvements (in-town distribution system)	\$658	\$1,204

Source – LOS is cost of demand from new development from Table 34.

Table 36 shows calculation of the unit cost of service for Fayetteville-owned facilities, in terms of function (system vs. local) and by service area.

Cost is based on the value of the current inventory, plus future master plan projects. The master plan defines projects and cost needed to meet total demand as of 2023 (the “design year”). The cost of projects attributable to existing or new development is not separately defined, nor is it disaggregated in terms of “system” or “local” improvements. Accordingly, cost by function is estimated assuming that lines greater than 8 inches, and 14 inches or less, are local improvements, and that lines larger than 14 inches are system improvements. (Lines 8 inches and less are assumed to be provided by project developers.)

For Elkins, the cost of local improvements attributable to new development is as defined by the Elkins water master plan.

Table 36

<b>UNIT COST OF WATER CAPITAL FACILITIES</b>			
Unit Cost of Capital Facilities Service Provision (per EDU)			
	District Total (excluding Elkins)	Elkins	Total
<b>System Improvements</b>			
Existing Facilities (estimated replacement cost)			\$168,154,501
Master Plan Facilities			\$29,567,940
Total			\$197,722,441
Design Year Total Service Units (service area total, 2023)			85,404
Cost per Service Unit			\$2,315
<b>Local Improvements</b>			
Existing Facilities (estimated replacement cost)	\$49,693,811	na	
Master Plan Facilities	\$5,691,565	\$2,711,564	
Total	\$55,385,377	\$2,711,564	
Cost per Service Unit (end-state)			
Design Capacity (EDU, end-state)	84,223		
Cost per Service Unit	\$658		
Cost per Service Unit (new development cost only)			
Design Capacity (EDU, end-state)		3,000	
Existing Development (EDU)		-748	
New Development (EDU)		2,252	
Cost per Service Unit		\$1,204	

Source – For system and local improvements, the cost of existing facilities is from Table 37. The cost of planned facilities is from Table 38. Total service units are from Table 32. For Elkins local improvements, cost is from Table 38. Elkins design capacity and existing development (EDU) is from the Elkins water master plan.

Table 37 and Table 38 detail calculation of the value of existing and future capital facilities.

Table 37

<b>VALUE OF EXISTING WATER CAPITAL FACILITIES</b>				
Estimated Value of Fayetteville Owned System (year-end 2006)				
Total	Allocation by Function			
	System (lines greater than 14" diam.)	Local		Eligible (greater than 8" diam.)
		Total		
Distribution Lines	\$494,175,966	\$160,696,243	\$333,479,724	\$49,693,811
Pumps	\$268,750	\$268,750	\$0	\$0
Tanks	\$7,189,509	\$7,189,509	\$0	\$0
<b>Total</b>	<b>\$501,634,225</b>	<b>\$168,154,501</b>	<b>\$333,479,724</b>	<b>\$49,693,811</b>

Source – Fayetteville current water system inventory, shown in Table 55 to Table 57.

Table 38

<b>PLANNED WATER CAPITAL IMPROVEMENTS</b>							
Summary of Elkins and Fayetteville Water Master Plans							
	Fayetteville Water Master Plan			Elkins Water Master Plan	Cost by Function (system and local improvements, allocated)		
	Total (2004 \$s)	Total (2007 \$s) 6.0% per year, 3 years	Total (2007 \$s with contingency)		System (pipe greater than 14" diam.)	Local	
						Total	Eligible (greater than 8" diam.)
<b>Elkins</b>							
14" Water Main, Hwy. 16 (new devp. share - 21.4%)				\$809,863	\$809,863	\$809,863	
Tank, Pump Station and Main to West Mtn.				\$785,163	\$785,163	\$785,163	
Water Distribution on West Mountain				\$712,438	\$712,438	\$712,438	
350,000 tank on Primary Pressure Plane				\$404,100	\$404,100	\$404,100	
<b>Total</b>				<b>\$2,711,564</b>	<b>\$0</b>	<b>\$2,711,564</b>	
<b>District Total</b>							
(projects for capacity and deficiency correction)							
<b>Phase I</b>							
5 MG Ground Storage (2)	\$3,000,000	\$3,573,048	\$4,644,891.18	\$4,644,891			
6" Pipe	\$11,600	\$13,816	\$17,960.25		\$17,960		
8" Pipe	\$789,000	\$939,712	\$1,221,606.38		\$1,221,606		
12" Pipe	\$2,787,000	\$3,319,362	\$4,315,103.91		\$4,315,104	\$4,315,104	
24" Pipe	\$2,443,000	\$2,909,652	\$3,782,489.72	\$3,782,490			
Sub-Total	\$9,030,600	\$10,755,589	\$13,982,051.43				
Contingency	\$2,709,000	\$3,226,462					
Sub-Total	\$11,739,600	\$13,982,051	\$13,982,051				
<b>Phase II</b>							
5 MG Ground Storage (1)	\$1,500,000	\$1,786,524	\$2,322,481	\$2,322,481			
48" Pipe (new development share - 13.6%)	\$4,426,596	\$5,272,146	\$6,853,790	\$6,853,790			
24" Pipe	\$2,515,000	\$2,995,405	\$3,894,027	\$3,894,027			
Sub-Total	\$8,441,596	\$10,054,076	\$13,070,299				
Contingency	\$2,532,479	\$3,016,223					
Sub-Total	\$10,974,075	\$13,070,299	\$13,070,299				
<b>Phase III</b>							
5 MG Ground Storage (1)	\$1,500,000	\$1,786,524	\$2,322,488.52	\$2,322,489			
6 MG Ground Storage (1)	\$1,800,000	\$2,143,829	\$2,786,986.22	\$2,786,986			
12" Pipe	\$889,000	\$1,058,813	\$1,376,461.53		\$1,376,462	\$1,376,462	
18" Pipe	\$1,912,250	\$2,277,520	\$2,960,785.78	\$2,960,786			
Sub-Total	\$6,101,250	\$7,266,686	\$9,446,722.06				
Contingency	\$1,830,400	\$2,180,036					
Sub-Total	\$7,931,650	\$9,446,722	\$9,446,722				
<b>District Total</b>	<b>\$30,645,325</b>	<b>\$36,499,072</b>	<b>\$36,499,072</b>	<b>\$29,567,940</b>	<b>\$6,931,132</b>	<b>\$5,691,565</b>	
<b>TOTAL</b>				<b>\$29,567,940</b>	<b>\$9,642,696</b>	<b>\$8,403,129</b>	

Source – Elkins cost and functional allocation from McClelland Consulting Engineers, *Elkins Preliminary Cost Estimates Water and Wastewater Master Plan, 9/6/07*, page 3. 14" water main cost is new development share of \$3.8 million total cost. Fayetteville cost from McGoodwin, Williams and Yates Inc., *Master Plan Study, Draft, Water Transmission and Distribution System, City of Fayetteville*, June 2004. 2007 cost is estimated assuming 6% annual growth (the adopted Fayetteville CIP cost inflation rate). Functional allocation is estimated, assuming local facilities to be distribution lines 14" and smaller, and greater than 8". 48 inch pipe cost is new development share of \$32.5 million total cost.

## Revenue Credits & Net Cost per Service Unit

The previous section defines cost to meet demand from new development – capital facilities total cost and cost per service unit (the “gross” impact fee).

This section defines the net payable impact fee, which is a reduced amount to account for future debt principal payments for water refunding bonds that were used to provide improvements for existing development.

The rationale underlying calculation of impact fee revenue credits, detailed on page 9, can be summarized as follows:

- New development should not pay for a level of service higher than that provided existing development.
- New development should not pay more than its proportionate share of the cost of requisite new capacity (including consideration of other capital facilities revenue).
- Credit may be appropriate in certain cases to offset future, dedicated capital facility capacity funding attributable to new development, or future payments by new development used to retire debt for existing service provision.

As part of this analysis, a review of water facilities funding was conducted to identify dedicated revenue that might reliably supplement impact fees, and other funding that could potentially yield revenue credits. That review is summarized as follows:

- Neither the Fayetteville nor Elkins systems receive, or anticipate, external funding (grants or similar) dedicated to capacity expansion of facilities of the type planned to be funded by impact fees.
- System and local capital improvements for existing development (e.g., capital facility rehabilitation) are expected to be funded by user fee revenue.
- System and local improvements for new development are expected to be funded primarily by impact fees.
- Certain facilities are expected to be obtained by means of exaction or negotiated contribution – distribution lines 8 inches in diameter and less, for example. Cost for this component of new development capacity is excluded from impact fee calculations.
- To the extent that other facilities are obtained at no cost from new development, impact fee credit will be calculated on a case-specific basis, as agreements to secure the capacity are finalized.

Water

The revenue credit for future debt principal payments by new development for water refunding bonds used to provide improvements for existing development, is calculated as follows:

Table 39

<b>CREDIT FOR WATER REFUNDING REVENUE BOND PRINCIPAL PAYMENTS</b>						
Water Impact Fee						
	Revenue Bond Remaining Principal Payments.				Service Units (EDU, system total)	Revenue Credit per Service unit
	2002a (rev)	2002b (rev)	2004 (rev)	Total		
2007	\$460,000	\$35,000	\$615,000	\$1,110,000	59,868	\$18.54
2008	\$480,000	\$35,000	\$635,000	\$1,150,000	61,212	\$18.79
2009		\$535,000	\$655,000	\$1,190,000	62,586	\$19.01
2010		\$555,000	\$670,000	\$1,225,000	63,991	\$19.14
2011		\$580,000	\$690,000	\$1,270,000	65,427	\$19.41
2012		\$605,000	\$1,515,000	\$2,120,000	66,896	\$31.69
2013		\$635,000		\$635,000	68,398	\$9.28
2014		\$660,000		\$660,000	69,933	\$9.44
2015		\$695,000		\$695,000	71,504	\$9.72
2016		\$725,000		\$725,000	73,109	\$9.92
2017		\$765,000		\$765,000	74,750	\$10.23
2018						
2019						
2020						
2021						
2022						
2023						
<b>Total</b>	<b>\$940,000</b>	<b>\$5,825,000</b>	<b>\$4,780,000</b>	<b>\$11,545,000</b>		<b>\$175.18</b>
Net Present Value (0.00% discount rate)						\$18.58

Source – principal payments from Fayetteville Finance Director. Number of service units from Table 32. Discount rate from Table 19. The fee reduction is the quotient of principal payments and total service units. The Finance Director has advised that the revenue bonds, though not specifically earmarked, were used only for water system capital projects.

Net cost per service unit is calculated as follows.

Table 40

<b>WATER NET COST PER SERVICE UNIT</b>		
Net Cost of Water Capital Facility Capacity for New Development		
	District Total (excluding Elkins)	Elkins
<b>System Improvements</b>		
Cost per Service Unit	\$2,315	\$2,315
Less - Future Bond Principal Payments	(\$19)	(\$19)
Net Cost per Service Unit	\$2,297	\$2,297
Local Improvements (in-town distribution system)		
<b>Net Cost per Service Unit</b>	<b>\$658</b>	<b>\$1,204</b>

Source – Cost per service unit from Table 34. Revenue credit from Table 39.



## Net Cost Schedule and Total Impact Fee Revenue

The maximum water impact fees that could be charged by participating localities, based on data, methodology and assumptions in this analysis, are shown in Table 41 to Table 46.

Table 41

<b>WATER NET COST SCHEDULE - SYSTEM IMPROVEMENTS</b>				
Maximum Potential Impact Fees for System Facilities (fee revenue remitted to City of Fayetteville)				
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount	
			All (excluding Elkins)	Elkins
Net Cost per Service Unit (EDU)			\$2,297	\$2,297
Single-Family	dwelling unit	1.00	\$2,297	\$2,297
Multi-Family	dwelling unit	0.71	\$1,634	\$1,634
Mobile Home	dwelling unit	1.00	\$2,297	\$2,297
Nonresidential				
5/8" x 3/4" meter	water meter	1.00	\$2,297	\$2,297
1" meter	water meter	2.50	\$5,741	\$5,741
1 1/2" meter	water meter	5.00	\$11,483	\$11,483
2" meter	water meter	8.00	\$18,373	\$18,373
3" meter	water meter	16.00	\$36,745	\$36,745
4" meter	water meter	25.00	\$57,414	\$57,414
6" meter	water meter	50.00	\$114,828	\$114,828
8" meter	water meter	80.00	\$183,725	\$183,725
10" meter	water meter	115.00	\$264,105	\$264,105

Source – Net cost per service unit from Table 40. Service unit generation rates from Table 9.

Table 42

<b>WATER NET COST SCHEDULE - LOCAL IMPROVEMENTS</b>				
Maximum Potential Impact Fees for In-town Facilities (fee revenue remitted to Fayetteville or Elkins)				
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount	
			All (excluding Elkins)	Elkins
Net Cost per Service Unit (EDU)			\$658	\$1,204
Single-Family	dwelling unit	1.00	\$658	\$1,204
Multi-Family	dwelling unit	0.71	\$468	\$856
Mobile Home	dwelling unit	1.00	\$658	\$1,204
Nonresidential				
5/8" x 3/4" meter	water meter	1.00	\$658	\$1,204
1" meter	water meter	2.50	\$1,644	\$3,010
1 1/2" meter	water meter	5.00	\$3,288	\$6,020
2" meter	water meter	8.00	\$5,261	\$9,633
3" meter	water meter	16.00	\$10,522	\$19,266
4" meter	water meter	25.00	\$16,440	\$30,102
6" meter	water meter	50.00	\$32,880	\$60,205
8" meter	water meter	80.00	\$52,608	\$96,328
10" meter	water meter	115.00	\$75,624	\$138,471

Source – Net cost per service unit from Table 40. Service unit generation rates from Table 9.

Water

Table 43

<b>WATER NET COST SCHEDULE - SYSTEM &amp; LOCAL IMPROVEMENTS</b>				
Maximum Potential System and In-Town Facilities Impact Fee (total cost to fee payer)				
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount	
			All (excluding Elkins)	Elkins
Net Cost per Service Unit (EDU)			\$2,954	\$3,501
Single-Family	dwelling unit	1.00	\$2,954	\$3,501
Multi-Family	dwelling unit	0.71	\$2,101	\$2,490
Mobile Home	dwelling unit	1.00	\$2,954	\$3,501
<b>Nonresidential</b>				
5/8" x 3/4" meter	water meter	1.00	\$2,954	\$3,501
1" meter	water meter	2.50	\$7,385	\$8,752
1 1/2" meter	water meter	5.00	\$14,771	\$17,503
2" meter	water meter	8.00	\$23,633	\$28,005
3" meter	water meter	16.00	\$47,267	\$56,011
4" meter	water meter	25.00	\$73,854	\$87,517
6" meter	water meter	50.00	\$147,708	\$175,033
8" meter	water meter	80.00	\$236,333	\$280,053
10" meter	water meter	115.00	\$339,729	\$402,576

Source – Net cost per service unit is the total of system and local improvements, from Table 40. Service unit generation rates from Table 9.

Table 44 to Table 46 show optional, variable rate single-family water impact fees.

Table 44

<b>WATER SINGLE-FAMILY VARIABLE RATE NET COST - SYSTEM IMPROVEMENTS</b>				
Maximum Potential Impact Fees for System Facilities (fee revenue remitted to City of Fayetteville)				
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount	
			All (excluding Elkins)	Elkins
Net Cost per Service Unit (EDU)			\$2,297	\$2,297
Single-Family, up to 1,300 square feet	dwelling unit	0.82	\$1,893	\$1,893
Single-Family, 1,301 to 1,700 square feet	dwelling unit	1.04	\$2,393	\$2,393
Single-Family, 1,701 to 2,300 square feet	dwelling unit	1.18	\$2,700	\$2,700
Single-Family, more than 2,300 square feet	dwelling unit	1.32	\$3,027	\$3,027

Source – Net cost per service unit from Table 40. Service unit generation rates from Table 9.

Table 45

<b>WATER SINGLE-FAMILY VARIABLE RATE NET COST - LOCAL IMPROVEMENTS</b>				
Maximum Potential Impact Fees for In-town Facilities (fee revenue remitted to Fayetteville or Elkins)				
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount	
			All (excluding Elkins)	Elkins
Net Cost per Service Unit (EDU)			\$658	\$1,204
Single-Family, up to 1,300 square feet	dwelling unit	0.82	\$542	\$992
Single-Family, 1,301 to 1,700 square feet	dwelling unit	1.04	\$685	\$1,254
Single-Family, 1,701 to 2,300 square feet	dwelling unit	1.18	\$773	\$1,416
Single-Family, more than 2,300 square feet	dwelling unit	1.32	\$867	\$1,587

Source – Net cost per service unit from Table 40. Service unit generation rates from Table 9.

Table 46

<b>WATER SINGLE-FAMILY VARIABLE RATE NET COST - SYSTEM &amp; LOCAL IMPROVEMENTS</b>				
Maximum Potential System and In-Town Facilities Impact Fee (total cost to fee payer)				
Property Type	Unit of Measure	Service Unit Generation Rate (EDU)	Impact Fee Amount	
			All (excluding Elkins)	Elkins
Net Cost per Service Unit (EDU)			\$2,954	\$3,501
Single-Family, up to 1,300 square feet	dwelling unit	0.82	\$2,435	\$2,885
Single-Family, 1,301 to 1,700 square feet	dwelling unit	1.04	\$3,078	\$3,647
Single-Family, 1,701 to 2,300 square feet	dwelling unit	1.18	\$3,473	\$4,116
Single-Family, more than 2,300 square feet	dwelling unit	1.32	\$3,894	\$4,614

Source – Net cost per service unit is the total of system and local improvements, from Table 40. Service unit generation rates from Table 9.

Maximum potential impact fee revenue that could accrue over the next ten years if fees are assessed at the rates shown above, and if growth occurs as projected, is as follows:

Table 47

<b>WATER MAXIMUM POTENTIAL IMPACT FEE REVENUE (NEXT 10 YEARS)</b>					
System and Local Impact Fees					
Description	Fayetteville Revenue				Elkins Revenue (local improvements)  (point of coll.)
	System Improvements		Local Improvs.		
	Service Area Total (excluding Elkins)	Elkins	Service Area Total (excluding Elkins)	Total	
	(point of collection)		(point of coll.)		
<b>Net Cost per Service Unit</b>	\$2,297	\$2,297	\$658		\$1,204
<b>Potential Annual Revenue</b>					
2008	\$3,036,620	\$49,715	\$869,513	\$3,955,847	\$26,066
2009	\$3,104,535	\$51,153	\$888,960	\$4,044,648	\$26,820
2010	\$3,173,970	\$52,634	\$908,842	\$4,135,445	\$27,596
2011	\$3,244,958	\$54,157	\$929,169	\$4,228,283	\$28,395
2012	\$3,317,533	\$55,724	\$949,950	\$4,323,207	\$29,216
2013	\$3,391,732	\$57,336	\$971,196	\$4,420,264	\$30,062
2014	\$3,467,590	\$58,996	\$992,918	\$4,519,503	\$30,932
2015	\$3,545,144	\$60,703	\$1,015,125	\$4,620,972	\$31,827
2016	\$3,624,434	\$62,460	\$1,037,829	\$4,724,722	\$32,748
2017	\$3,705,496	\$64,267	\$1,061,040	\$4,830,803	\$33,695
Total	\$33,612,012	\$567,143	\$9,624,540	\$43,803,695	\$297,356
<b>Annual New Service Units (EDU)</b>					
2008	1,322	22		1,344	
2009	1,352	22		1,374	
2010	1,382	23		1,405	
2011	1,413	24		1,437	
2012	1,445	24		1,469	
2013	1,477	25		1,502	
2014	1,510	26		1,536	
2015	1,544	26		1,570	
2016	1,578	27		1,605	
2017	1,613	28		1,641	
Total	14,636	247		14,883	

Source – Net cost per service unit from Table 40. Total service units from Table 32, calculated each year as the difference between current and prior year total units.

## Water Capital Facilities Plan

Water system capital improvements needed to meet demand from new development are defined by the 2006 Water CIP, summarized below. The CIP includes cost attributable to new development in an amount equal to impact fees collected over the next six or seven years. (The new development share of cost is \$29.8 million. Five year impact fee revenue beginning in 2008 is about \$20.7 million). The CIP is updated every two years, and staff advise that it is expected to continue to fully utilize all available impact fee revenue.

Table 48

<b>WATER IMPROVEMENTS FOR NEW DEVELOPMENT</b>					
Summary of City of Fayetteville 2006 Water CIP (part)					
	CIP Cost	Cost Attributable to New Capacity	Deferred Cost	Deferred Cost Attributable to New Capacity	Total Cost of Capacity for New Development
<b>Funded Projects</b>					
Water & Sewer Improvements	\$896,068	\$529,034	\$0	\$0	\$529,034
Water & Sewer Service Improvements	\$710,501	\$0	\$0	\$0	\$0
Budgeted Capital Projects	\$1,178,763	\$0	\$0	\$0	\$0
Sub-Total	\$2,785,332	\$529,034	\$0	\$0	\$529,034
<b>Unfunded Projects</b>	\$44,638,500	\$23,920,625	\$12,454,500	\$5,308,750	\$29,229,375
<b>TOTAL</b>	\$47,423,832	\$24,449,659	\$12,454,500	\$5,308,750	\$29,758,409

Source – Fayetteville planning staff. Deferred cost is for projects that are partially funded – for example, a project with temporarily reduced scope with part in construction or completed, and part that will be completed in the future; or a design/build project where the design begins while funding continues to be accumulated for construction.

For Elkins local improvements, cost is defined by a facility plan summarized in Table 38. The plan shows a build-out cost of capacity for new development of \$2.7 million – substantially in excess of near-term impact fee revenue (beginning in 2008, five year revenue is estimated to be roughly \$138,000, assuming remaining new development of about 2,250 units and an annual growth rate of about 3%, as defined by the facility plan).

## APPENDIX

Table 49

<b>WSIP COST ATTRIBUTABLE TO NEW DEVELOPMENT (page 1 of 2)</b>							
Plant and Associated Collection System Improvements, Excluding Fayetteville-Farmington Cost-Share Projects							
Description	Current Line Capacity (mgd)	New Line/PS Capacity (mgd)	% Cost Allocated for Current Capacity <sup>2</sup>	% Increased Capacity	Total Cost (\$)	Cost of Current Capacity (\$)	Cost of Increased Capacity (\$)
<b>Construction Cost</b>							
WL-1 <sup>1</sup>	7.96	16.97	46.91%	53.09%	\$4,183,226	\$1,962,197	\$2,221,029
WL-2	10.06	17.14	58.69%	41.31%	\$4,413,665	\$2,590,517	\$1,823,148
WL-3 <sup>1</sup>	3.52	7.48	47.06%	52.94%	\$2,831,722	\$1,332,575	\$1,499,147
WL-4	18.02	37.46	48.10%	51.90%	\$10,441,319	\$5,022,759	\$5,418,560
WL-5	2.30	36.00	6.39%	93.61%	\$4,582,537	\$292,773	\$4,289,764
WL-6	2.30	36.00	6.39%	93.61%	\$6,130,000	\$391,639	\$5,738,361
WL-7	7.92	19.00	41.68%	58.32%	\$1,557,000	\$649,023	\$907,977
WL-8	0.71	1.90	37.37%	62.63%	\$1,465,050	\$547,466	\$917,584
West Line Subtotal: <sup>3</sup>	52.79	171.95	30.70%	69.30%	\$35,604,519	\$12,788,950	\$22,815,569
West Side WWTP	0.00	10.00	0.00%	100.00%	\$64,242,418	\$0	\$64,242,418
Noland WWTP	12.40	11.40	100.00%	0.00%	\$17,276,880	\$17,276,880	\$0
EL-1	0.79	3.50	22.46%	77.54%	\$2,043,000	\$458,799	\$1,584,201
EL-2	23.30	23.70	98.31%	1.69%	\$14,225,000	\$13,984,916	\$240,084
EL-3	17.40	22.50	77.33%	22.67%	\$6,015,000	\$4,651,600	\$1,363,400
EL-4 <sup>8</sup>	4.95	5.14	96.30%	3.70%	\$229,000	\$220,535	\$8,465
EL-5	0.05	0.50	9.20%	90.80%	\$572,000	\$52,624	\$519,376
East Line Subtotal:	46.48	55.34	83.99%	16.01%	\$23,084,000	\$19,368,474	\$3,715,526
<b>Engineering<sup>4</sup></b>							
East Lines- Garver			83.99%	16.01%	\$2,721,743	\$2,286,087	\$435,656
West Lines- RJN			30.70%	69.30%	\$4,186,597	\$1,285,318	\$2,901,279
East Plant- Black and Veatch			100.00%	0.00%	\$3,841,200	\$3,841,200	\$0
West Plant- McGoodwin, Williams Yates			0.00%	100.00%	\$8,767,970	\$0	\$8,767,970
ECO/Wetlands/Stormwater <sup>5</sup>			35.00%	65.00%	\$960,750	\$336,263	\$624,488
Burns McDonnell Program Management <sup>6</sup>			35.00%	65.00%	\$2,685,366	\$939,878	\$1,745,488
CH2M Hill <sup>7</sup>			50.00%	50.00%	\$150,610	\$75,305	\$75,305
Engineering Subtotal:					\$23,314,236	\$8,764,051	\$14,550,185
Sub-Total					\$163,522,053	\$58,198,355	\$105,323,698
Allocated Other Costs (contingency, easements, Broyles Rd, and other)					\$17,161,648	\$6,107,920.39	\$11,053,727.61
<b>TOTAL</b>					<b>\$180,683,701</b>	<b>\$64,306,275</b>	<b>\$116,377,426</b>

Source – WSIP cost summary by Fayetteville Water/Wastewater Director. “Other” is proportionately allocated based on subtotal cost by category. Cost of current capacity is that part of cost attributable to service provision for existing development (rehab, deficiency correction, etc.). Cost of increased capacity is cost to serve new development. Table notes are as follows:

<sup>1</sup> WL-1 and WL-3 are combined into one contract; costs are broken as closely as possible.

<sup>2</sup> All capacity comparisons are made from the new line to the current line/lift station it is replacing.

<sup>3</sup> No West Fayetteville-Farmington area costs are included, although some of the cost is borne by Fayetteville and is an increase in capacity for that Fayetteville basin. Farmington calculations are on a separate sheet.

<sup>4</sup> Engineering costs are calculated by taking the % increased capacity for that project group times the cost of the engineering contract for that project group.

<sup>5</sup> ECO/Wetlands costs are distributed 80% to west side work and 20% to east side work, based on an approximate proportion of work effort required.

<sup>6</sup> Program Management costs are distributed based on a percentage of construction cost.

<sup>7</sup> CH2M Hill stream study/NPDES Permitting assistance costs are distributed 50% - 50%.

<sup>8</sup> Based on firm capacities for lift stations 13, 14, 16 and 18.

Table 50

<b>WSIP COST ATTRIBUTABLE TO NEW DEVELOPMENT (page 2 of 2)</b>							
Fayetteville-Farmington Cost Share Projects <sup>1</sup>							
Description	Current Line Capacity (mgd)	New Line/PS Capacity (mgd)	% Cost Allocated for Current Capacity <sup>2</sup>	% Increased Capacity	Total Cost (\$)	Cost of Current Capacity (\$)	Cost of Increased Capacity (\$)
<b>Construction Cost</b>							
WL-10 (Fay \$)	0.00	1.00	0.00%	100.00%	\$503,905	\$0	\$503,905
WL-10 (Farm \$)	0.78	1.00	78.00%	22.00%	\$2,049,713	\$1,598,776	\$450,937
WL-11 (Fay \$)	0.00	1.00	0.00%	100.00%	\$462,197	\$0	\$462,197
WL-11 (Farm \$)	1.00	1.00	100.00%	0.00%	\$1,165,660	\$1,165,660	\$0
WL-12 (Fay \$)	0.00	1.00	0.00%	100.00%	\$399,050	\$0	\$399,050
WL-12 (Farm \$)	1.00	1.00	100.00%	0.00%	\$1,006,405	\$1,006,405	\$0
Const. Subtotal-Fay:	0.00	3.00	0.00%	100.00%	\$1,365,152	\$0	\$1,365,152
Const. Subtotal-Farm:	2.78	3.00	92.67%	7.33%	\$4,221,778	\$3,770,841	\$450,937
Const. total:	2.78	6.00	46.33%	53.67%	\$5,586,930	\$3,770,841	\$1,816,089
<b>Engineering</b>							
Design- RJN (Fay \$)			0.00%	100.00%	\$615,291	\$0	\$615,291
Design- RJN (Farm \$)			92.67%	7.33%	\$480,000	\$444,800	\$35,200
Value Engineering- RSR (Farm\$)			0.00%	100.00%	\$39,844	\$0	\$39,844
Engineering Subtotal- Fay:					\$615,291	\$0	\$615,291
Engineering Subtotal - Farm:					\$519,844	\$444,800	\$75,044
Engineering Subtotal:					\$1,135,135	\$444,800	\$690,335
<b>Project Total Cost</b>							
Fayetteville					\$6,722,065	\$4,215,641	\$2,506,424
Farmington					\$1,980,443	\$0	\$1,980,443
Farmington					\$4,741,622	\$4,215,641	\$525,981
Fayetteville - % of total						0%	100%
Farmington - % of total						89%	11%
<b>Total Excluding Future Annexation (Fayetteville-Farmington contract amount)</b>							
Fayetteville					\$1,365,151	\$0	\$1,365,151
Farmington					\$3,475,842	\$3,090,272	\$385,570
Total					\$4,840,993	\$3,090,272	\$1,750,721

Source – WSIP cost summary of Fayetteville-Farmington cost share projects, by Water/Wastewater Director. Future annexations is the cost of capacity for area I-54 and I-55. Cost of current capacity is that part of cost attributable to service provision for existing development (rehab, deficiency correction, etc.). Cost of increased capacity is cost to serve new development. Table notes are as follows:

- 1 These numbers are based on the preliminary design report as reflected in the Fayetteville-Farmington contract. Final numbers will be determined when the bids are opened in late 2007.
- 2 All capacity comparisons are made from the new line to the current line/lift station it is replacing.

Table 51

<b>FAYETTEVILLE IN-CITY GRAVITY AND FORCE MAINS</b>				
Wastewater Collection System Inventory (Page 1 of 3)				
Sewer Line	Length (feet)	Replacement Cost (per linear. ft.)	Total Cost	New Construction Cost (70%)
(Fayetteville in-city facilities - excludes other cities)				
<b>Gravity Sewer Line (diameter, inches)</b>				
4	2,858	\$55	\$157,203	\$110,042
6	700,621	\$75	\$52,546,559	\$36,782,591
8	1,063,231	\$95	\$101,006,968	\$70,704,877
10	89,685	\$115	\$10,313,751	\$7,219,626
12	147,622	\$135	\$19,928,977	\$13,950,284
14	8,128	\$155	\$1,259,845	\$881,892
15	44,306	\$165	\$7,310,463	\$5,117,324
16	7,036	\$175	\$1,231,318	\$861,923
18	30,036	\$195	\$5,857,003	\$4,099,902
20	857	\$215	\$184,243	\$128,970
21	11,715	\$225	\$2,635,949	\$1,845,164
24	37,951	\$255	\$9,677,553	\$6,774,287
30	22,870	\$315	\$7,204,168	\$5,042,918
36	89	\$375	\$33,358	\$23,351
Total	2,167,006		\$219,347,358	\$153,543,151
Greater than 8" Diameter	400,296		\$65,636,628	\$45,945,640
<b>Force Main Sewer Line (diameter, inches)</b>				
2	1,016	\$48	\$48,782	\$34,148
3	6,365	\$72	\$458,313	\$320,819
4	17,677	\$96	\$1,697,012	\$1,187,908
6	6,442	\$144	\$927,692	\$649,384
8	5,213	\$192	\$1,000,967	\$700,677
10	8,159	\$240	\$1,958,242	\$1,370,769
12	26,772	\$288	\$7,710,340	\$5,397,238
14	5,494	\$336	\$1,845,947	\$1,292,163
16	4,586	\$384	\$1,761,211	\$1,232,848
18	24,317	\$432	\$10,504,906	\$7,353,434
20	4,895	\$480	\$2,349,769	\$1,644,838
24	10,849	\$576	\$6,248,989	\$4,374,293
30	59	\$720	\$42,563	\$29,794
36	25,428	\$864	\$21,969,703	\$15,378,792
Total	147,275		\$58,524,435	\$40,967,105
Greater than 8" Diameter	110,560		\$54,391,670	\$38,074,169
<b>TOTAL (greater than 8" diameter)</b>			<b>\$120,028,298</b>	<b>\$84,019,809</b>

Source – Inventory, replacement cost and new construction cost are from Fayetteville water/wastewater engineering staff. Pipe replacement is typically undertaken in higher density, less favorable construction conditions, and is more expensive than new construction cost (accomplished on a production basis, as part of site work). The new construction discount is as estimated by water/wastewater engineering staff. Inventory date is October 2006. Staff describe the inventory as representative of current conditions.

Appendix

Table 52

<b>PUMPS (EXCLUDING WSIP)</b>			
Wastewater Collection System Inventory (Page 2 of 3)			
Station #	Address	City	Estimated Current Cost
(Fayetteville in-city facilities - excludes other cities)			
1	978 E Zion Road	Fayetteville	\$100,000
2	4938 Mission Blvd	Fayetteville	\$100,000
3	2805 N Salem Road	Fayetteville	\$100,000
4	691 W Poplar	Fayetteville	\$2,000,000
6	3021 N Old Wire Road	Fayetteville	\$5,000,000
8	729 W North Street	Fayetteville	\$5,000,000
9	1336 N Porter Road	Fayetteville	\$2,000,000
10	716 Futrall Drive	Fayetteville	\$100,000
11	4412 W 6th Street	Fayetteville	\$100,000
13	878 S Stonebridge Road	Fayetteville	\$100,000
14	1820 S Armstrong	Fayetteville	\$2,000,000
15	203 E 29th Circle	Fayetteville	\$100,000
16	3917 S McCollum Road	Fayetteville	\$1,000,000
17	4394 S School	Fayetteville	\$100,000
18	202 N Sandy	Greenland	\$100,000
20	3212 N Highway 112	Fayetteville	\$100,000
22	630 N Double Springs Road	Fayetteville	\$100,000
23	440 E Fairway Ln	Fayetteville	\$100,000
24	4071 S McCollum	Fayetteville	\$100,000
25	511 W Aster Ave	Farmington	\$100,000
26	74 S Kestrel	Fayetteville	\$100,000
27	1031 River Meadows Drive	Fayetteville	\$100,000
28	1603 Plantation Avenue	Fayetteville	\$100,000
29	390 N Cato Springs Rd	Greenland	\$100,000
30	2324 Ruppel Road	Fayetteville	\$100,000
31	2130 W Moore Lane	Fayetteville	\$100,000
32	478 N Dorango Place	Fayetteville	\$100,000
33	4644 N Crossover Road	Fayetteville	\$100,000
34	4572 S School Ave	Fayetteville	\$100,000
35	3083 W 6th St	Fayetteville	\$100,000
36	1642 N Willowbrook Dr	Fayetteville	\$100,000
37	3848 W Edgewater Dr	Fayetteville	\$100,000
38	3710 E Zion Road	Fayetteville	\$100,000
39	2392 N Kenswick Ave	Fayetteville	\$100,000
40	1811 S Cherry Hills Dr	Fayetteville	\$100,000
41	1608 S Springlake Dr	Fayetteville	\$100,000
42	2588 N Firefly Catch Dr	Fayetteville	\$100,000
43	Unknown	Fayetteville	\$100,000
44	Unknown	Fayetteville	\$100,000
<b>Total</b>			<b>\$20,300,000</b>
	Fayetteville		\$20,000,000
	Farmington		\$100,000
	Greenland		\$200,000

Source – Inventory and replacement cost from water/wastewater engineering staff. Inventory date is October 2006. Staff describe the inventory as representative of current conditions.



Table 53

<b>FARMINGTON IN-CITY GRAVITY AND FORCE MAINS</b>				
Wastewater Collection System Inventory (Page 3 of 3)				
Sewer Line	Length (feet)	Replacement Cost (per linear. ft.)	Total Cost	New Construction Cost (70%)
<b>Gravity Sewer Line (diameter, inches)</b>				
4	104	NA		
6	58,573	NA		
8	53,289	NA		
10	1,151	\$115	\$132,386	\$92,670
<b>Force Main Sewer Line (diameter, inches)</b>				
2	0	NA		
3	1,203	NA		
4	0	NA		
6	0	NA		
8	10,805	NA		
<b>TOTAL (greater than 8" diameter)</b>			\$132,386	\$92,670

Source – Inventory, replacement cost and new construction cost are from Fayetteville water/wastewater engineering staff. Pipe replacement is typically undertaken in higher density, less favorable construction conditions, and is more expensive than new construction cost (accomplished on a production basis, as part of site work). The new construction discount is as estimated by water/wastewater engineering staff. Inventory date is October 2006. Staff describe the inventory as representative of current conditions.

Table 54

<b>GREENLAND WASTEWATER NEW DEVELOPMENT UNITS</b>				
Wastewater Master Plan Design Capacity and Estimated New Development				
Description	Master Plan Design Capacity (units)	Service Demand (per unit, gpd)		Total
		Master Plan (peak)	Average	
<b>Design Capacity (gpd)</b>				
Residential	1,400 (dwelling units)	250	188	262,624
Hotel	250 (rooms)	100	75	18,759
Commercial	555,000 (sq. ft.)	0.25	0.19	104,112
Total (gpd)				385,495
<b>Design Capacity (EDU)</b>				
GPD per EDU				188
Service Units (EDU)				2,055
<b>Current Demand (EDU)</b>				
Current Service Units				402
In Process Current Units				137
Total Current Units				539
<b>New Development (EDU)</b>				1,516

Source – design capacity (number of units), per unit peak service demand and in-process current units (EDU) from McClelland Consulting Engineers, *Greenland Wastewater Master Plan*, December 2006. Average per-unit nonresidential demand is calculated based on the residential, average to peak demand ratio. Residential average demand from Table 6. Design capacity (gpd) is the product of master plan design capacity (units) and average per-unit service demand (gpd). Design capacity (EDU) is the quotient of design total (GPD) and GPD per EDU from Table 6. Current demand as the sum of current service units from Table 6 and 137 in process units reported by the master plan. (In-process units will be served by existing capacity and are assumed to be completed before fee assessment begins.) New development (EDU) is the difference between design capacity and current demand. Inventory date is October 2006. Staff describe the inventory as representative of year-end 2007 conditions.

Table 55

<b>WATER LINE INVENTORY - SYSTEM TOTAL</b>							
Water Distribution Facilities Inventory (Page 1 of 3)							
Water Line	Length (feet)	Replacement Cost (per linear. ft.)	Total Cost	New Construction Cost (70%)	Allocation by Function		
					System (pipe greater than 14" diam.)	Local	
		Total	Eligible (greater than 8" diam.)				
(Fayetteville in-city facilities - excludes other cities)							
Line Size (diameter, inches)							
1	19,910	\$24	\$477,838	\$334,486		\$334,486	
1 1/4	10,840	\$30	\$325,192	\$227,634		\$227,634	
1 1/2	20,695	\$36	\$745,008	\$521,506		\$521,506	
2	340,266	\$48	\$16,332,749	\$11,432,924		\$11,432,924	
2 1/4	164,876	\$54	\$8,903,284	\$6,232,299		\$6,232,299	
2 1/2	1,103	\$60	\$66,178	\$46,324		\$46,324	
3	67,075	\$72	\$4,829,401	\$3,380,580		\$3,380,580	
4	248,773	\$96	\$23,882,250	\$16,717,575		\$16,717,575	
6	1,072,672	\$144	\$154,464,711	\$108,125,298		\$108,125,298	
8	1,017,614	\$192	\$195,381,836	\$136,767,285		\$136,767,285	
10	18,008	\$240	\$4,321,972	\$3,025,380		\$3,025,380	\$3,025,380
12	220,802	\$288	\$63,590,950	\$44,513,665		\$44,513,665	\$44,513,665
14	9,161	\$336	\$3,078,237	\$2,154,766		\$2,154,766	\$2,154,766
16	34,706	\$384	\$13,327,131	\$9,328,992	\$9,328,992		
18	14,422	\$432	\$6,230,337	\$4,361,236	\$4,361,236		
20	3,471	\$480	\$1,666,081	\$1,166,257	\$1,166,257		
24	70,936	\$576	\$40,858,899	\$28,601,230	\$28,601,230		
30	17,623	\$720	\$12,688,875	\$8,882,212	\$8,882,212		
36	119,894	\$864	\$103,588,137	\$72,511,696	\$72,511,696		
42	50,800	\$1,008	\$51,206,600	\$35,844,620	\$35,844,620		
<b>Total</b>	<b>3,523,646</b>		<b>\$705,965,666</b>	<b>\$494,175,966</b>	<b>\$160,696,243</b>	<b>\$333,479,724</b>	<b>\$49,693,811</b>

Source – Inventory, replacement cost and new construction cost are from Fayetteville water/wastewater engineering staff. The inventory includes facilities in Fayetteville, Farmington, Greenland, Goshen and Johnson. Inventory data is not available for other smaller cities which are part of the water district. Pipe replacement is typically undertaken in higher density, less favorable construction conditions, and is more expensive than new construction cost (accomplished on a production basis, as part of site work). The new construction discount is as estimated by water/wastewater engineering staff. Allocation by function is not specifically known, and is here estimated, assuming lines larger than 14 inches diameter provide system capacity and lines 14 inches and less, and greater than 8 inches, provide local capacity. Lines 8" and smaller are typically provided as part of private-sector, project improvements, and for that reason are here excluded from impact fee calculations. Inventory date is October 2006. Staff describe the inventory as representative of current conditions.

Table 56

<b>PUMP INVENTORY - SYSTEM TOTAL</b>					
Water Distribution Facilities Inventory (Page 2 of 3)					
Pump	Pressure Plane	Service Area	Pump 1 Capacity (gpm)	Estimated Current Cost	
(Fayetteville in-city facilities - excludes other cities)					
W1 South	Mountain	South Mtn	Fayetteville	550	\$75,000
W2	Hyland Park	Mt Sequoyah	Fayetteville	430	\$25,000
W4	Ash Street	Township	Fayetteville	200	\$12,500
W5	Rodgers Drive	Mt Sequoyah	Fayetteville	800	\$62,500
W13	Benson	Benson Mtn	Benson	42	\$6,250
W14	Round Mtn	Round Mtn	Round Mtn.	100	\$6,250
W 18	Gulley Rd	Gulley	Fayetteville	1,000	\$56,250
Sunrise	Mountain Rd		Fayetteville	40	\$6,250
Blue	Springs Rd	Blue Springs Rd	Fayetteville	Jet Pump	\$9,375
Round	Mountain Rd	Round Mtn 2	Round Mtn.	Jet Pump	\$9,375
W12	Slaughter Mtn	Control Valve	Fayetteville	na	na
	Beav-o-Rama	PRV	Fayetteville	na	na
	Fox Trail	PRV	Fayetteville	na	na
	Wyman Road	PRV	Fayetteville	na	na
Total					\$268,750

Inventory, replacement cost and new construction cost are from Fayetteville water/wastewater engineering staff. Inventory date is October 2006, which is considered by staff to be representative of current conditions. Control valves and PVRs are excluded because current cost is not available.

Table 57

<b>TANK INVENTORY - SYSTEM TOTAL</b>						
Water Distribution Facilities Inventory (Page 3 of 3)						
Tank	Pressure Plane	Service Area	Capacity (mg)	Unit Cost (per mg, new const.)	Estimated Current Cost	
(Fayetteville in-city facilities - excludes other cities)						
W8	Markham	Primary	Fayetteville	1.000	\$250,113	\$250,113
W6	Baxter-Small	Primary	Fayetteville	1.000	\$250,113	\$250,113
W6	Baxter-Large	Primary	Fayetteville	5.000	\$250,113	\$1,250,567
W7	Rodgers #1	Primary	Fayetteville	4.000	\$250,113	\$1,000,453
W7	Rodgers #2	Primary	Fayetteville	4.000	\$250,113	\$1,000,453
W11	Kessler #1	Primary	Fayetteville	6.000	\$250,113	\$1,500,680
W11	Kessler #2	Primary	Fayetteville	6.000	\$250,113	\$1,500,680
W10	Township	Township	Fayetteville	0.075	\$250,113	\$18,759
	Surge Tank	Primary	not storage	0.235	\$250,113	\$58,777
W16	Benson	Benson	Goshen area	0.035	\$250,113	\$8,754
W13	Goshen	Goshen	Goshen area	0.300	\$250,113	\$75,034
W17	Gulley	Gulley	Goshen area	0.750	\$250,113	\$187,585
W15	Round Mtn	Round Mtn.	Round Mtn area	0.100	\$250,113	\$25,011
W9	Mt Sequoyah	Mt. Sequoyah	Fayetteville	0.250	\$250,113	\$62,528
Total						\$7,189,509

Source – Inventory, replacement cost and new construction cost are from Fayetteville water/wastewater engineering staff. Replacement cost is master plan 2004 unit cost, inflated at the rate is 6% per year to approximate actual future cost. Inflation rate from current City of Fayetteville CIP. Inventory date is October 2006. Staff describe the inventory as representative of current conditions.