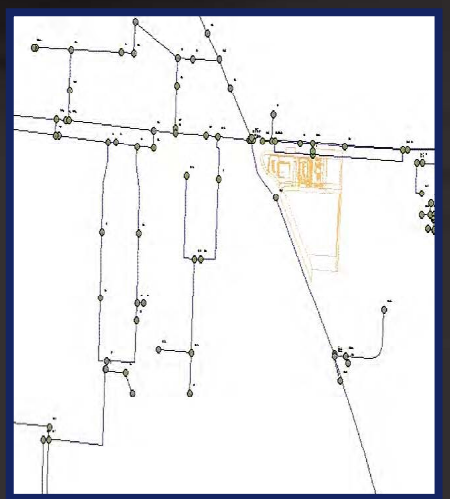

WATER MASTER PLAN

DISTRIBUTION, STORAGE AND SUPPLY

April 2008

for the

Tontitown Water and

Sewer Commission

CITY OF TONTITOWN, ARKANSAS
WATER AND SEWER COMMISSION
P.O. BOX 127
TONTITOWN, ARKANSAS 72770

USI Consulting Engineers

Springdale, Arkansas

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EXECUTIVE SUMMARY

The purpose of this study, authorized by the Tontitown Water and Sewer Commission in 2008, is to evaluate the existing water distribution system and to make recommendations for distribution system and storage improvements necessary to meet future demands in 5, 10, and 20 years.

The recommendations have been prioritized in each of the three planning horizons: Near Term (1-5 years), Intermediate Term (6-10 years), and Long Term (10-20 years). This report also provides an opinion of probable cost for each improvement that can be used as a reference for the Water and Sewer Commission in budgeting funds to construct the recommended improvements.

The U.S Census Bureau, Northwest Arkansas Regional Planning, Springdale Water Utilities, and the Tontitown Water and Sewer Commission were helpful in providing data such as historic population trends, population projections, water use records, GIS maps, and data specific to various system appurtenances.

This data was then used to project population trends, water usage trends, and factors for peak day and peak hour demands, providing a basis for estimate of future water usage and demand during the planning periods outlined above. Below is a summary of the projected demands.

	Current	2013	2018	2023
Average Daily Demand	0.242 MGD	0.264 MGD	0.313 MGD	0.410 MGD
Peak Daily Demand	0.522 MGD	0.570 MGD	0.675 MGD	0.886 MGD
Peak Hourly Demand	0.920 MGD	1.0 MGD	1.19 MGD	1.56 MGD
Peak Daily Demand w/ AEP	0.954 MGD	1.0 MGD	1.11 MGD	1.32 MGD
Peak Hourly Demand w/ AEP	1.78 MGD	1.86 MGD	2.05 MGD	2.42 MGD

The water distribution system was analyzed using an H2Omap Water computer model supported by data from the Tontitown system. The distribution system analyses indicate that presently the system is capable of delivering adequate flows and pressures to most areas, but that improvements will be necessary to maintain the current level of service in the future and provide an acceptable ISO fire rated system in most areas of the city.

The Near Term improvements recommended are necessary to:

1. Provide system storage to mitigate the effects of peak demands and supplement fire flow events.
2. Provide an alternative feed route to the Mattison power generation facility to increase reliability.
3. Provide a large diameter loop (8" or larger) in the southern portion of the city, which also allows more effective use of the 6" metered feed point near Kissinger Road.
4. Replace and upgrade critical sections of line and eliminate asbestos cement pipelines from the system.
5. Anticipate future demand and future construction.

The Intermediate Term improvements recommended are necessary to:

1. Provide internal connecting lines to improve overall capability and reliability.
2. Provide a large diameter (8" or larger) loop for the western portion of the city to increase available supply in that area.

The Long Term improvements recommended are necessary to:

1. Provide a large diameter (8" and larger) loop for the northern portion of the city to serve anticipated growth resulting from availability of sewer service.
2. Reinforce the "backbone" distribution along the commercial corridor of the city.

The computer modeling indicates that with the recommended improvements in place, the water distribution system will not only keep pace with anticipated growth, but will also improve the system capability and reliability.

A prioritized list of the recommended improvements is provided below along with estimates of probable costs. The costs are in 2008 dollars, and include construction, engineering, and contingencies, but do not include allowances for easements and land acquisition.

Near Term 1 – 5 years

➢ 500,000 Gallon Elevated Storage Tank Rate of Flow Controllers, Telemetry, and 12" Connecting Line	$1,960,000
➢ Purchase Storage Tank Site	Market
➢ Harmon Road to Liberty Road 8" Waterline	$235,000
➢ Kissinger Road 8" Waterline	$655,000
➢ Highway 412 Bypass Encasements	$100,000
➢ SCADA for 3" Meter Location	$ 7,500
➢ Jones Road to Maestri Road 8" Replace and Upsize to 12"	$275,000
➢ Barrington Road 6" Replace and Upsize to 8"	$240,000
Total	**$3,472,500**

Intermediate Term 6 – 10 years

➢ Klenc Road 8" Waterline	$ 620,000
➢ 8" Waterline, Barrington Road to Bausinger Road	$ 705,000
➢ Wildcat Creek Road/ Harmon Road 8" Waterline	$ 935,000
Total	**$2,260,000**

Long Term 10 – 20 years

➢ 8" Northern Loop Waterline	$1,550,000
➢ 12" Henri de Tonti Trunk Line Upgrade	$2,275,000
Total	**$3,825,000**

A recommendation was also made that the Tontitown Water and Sewer Commission increase the Tontitown Water Service Area in accordance with the Arkansas State Water Plan to include all of the current city limits and to continue the practice as the city limits expand in the future.

Implementation of these improvements over the 20-year planning period will help ensure that Tontitown can meet the water demands of their existing and future customers.

SECTION 100 – INTRODUCTION

This report details the results of a Water Distribution Master Plan Study conducted for the City of Tontitown. The purpose of this study is to provide a planning document to allow Tontitown to prepare for and implement an orderly and logical expansion of water distribution facilities to meet the needs of the community as population and demand for potable water increase in the future.

The report will evaluate the Tontitown water system in its present configuration as well as provide analyses and evaluations of projected future conditions in 5, 10, and 20 years. Each analysis will be conducted under a variety of hydraulic demand scenarios including average day, maximum day, maximum hour, and fire flow conditions.

The Master Plan Report will also form the basis and provide supporting documentation for an application for Water Plan Compliance to be submitted to the Arkansas Natural Resources Commission.

A. Authorization

The Tontitown Water and Sewer Commission authorized USI Consulting Engineers, Inc., in February 2008, to conduct a Master Plan Study of the Water Distribution System for planning purposes and to apply for Water Plan Certification from the Arkansas Natural Resources Commission.

B. Scope of Study

The Scope of the Master Plan Study includes the following:

1. Utilize an existing computer model to analyze the Tontitown water distribution system under existing hydraulic demands and projected future demands for the 5, 10, and 20 year planning horizons and to identify any weaknesses in the system.

2. Evaluate the water supply source for Tontitown including alternatives that may exist.

3. Develop water storage requirements for the plan years.

4. Develop water system recommendations and priorities for the plan years.

5. Prepare opinions of probable costs for the recommended improvements.

6. Prepare recommendations for policies, strategies and procedures for the Commissions' consideration for orderly development of the water distribution system.

7. Prepare an application for Water Plan compliance and certification for the Commissions' submittal to the Arkansas Natural Resources Commission.

SECTION 200 – POPULATION AND WATER USAGE PROJECTIONS

A. Historical Population

The City of Tontitown was established by Italian Immigrants in the late 1800's and incorporated in 1909. From the date of incorporation up until 1990, the population growth in Tontitown was very gradual and for all intents and purposes, stable. As indicated by the data below, little can be inferred from historical data before 1990 as it might pertain to a growth pattern. The 1990 U.S. census population of Tontitown was 460 residents.

Census History

Year	Population
1910 –	222
1920 –	235
1930 –	188
1940 –	189
1950 –	203
1960 –	209
1970 –	426
1980 –	615
1990 -	460
2000 –	942

After 1990, Tontitown began to experience population growth that mirrored the type seen throughout Washington and Benton counties in Arkansas. By 2000, the census population had more than doubled from 460 to 942 residents.

B. Population Projections

In many cases, population projections are based largely on trends evident in historical data. In the case of Tontitown, this basis of projecting future population would not be very practical statistically because population growth in Tontitown has been abrupt and volatile in recent years.

The projection shown in Table 200-1 below was compiled by the Northwest Arkansas Planning Commission in 2004 and reflects a conservative estimate.

TABLE 200-1

City	Census	Census	Est.	Average	Projection	Projection	Projection
	1990	2000	2005	Increase	2013	2018	2028
				Per year			
Tontitown	460	942	1,057	40	1,381	1,584	1,988

The projection shown in Table 200-2 below was compiled by the Northwest Arkansas Planning Commission in 2005 and follows a trend based on an estimated 2005 population of 1812 residents. Data provided by the Northwest Arkansas Regional Planning Commission suggests that, based on "dwelling units added", Tontitown added 755 residents in 2004 alone. Based on this estimate, the 15-year period average population increase is shown to be 90 residents per year.

TABLE 200-2

City	Census	Census	Est.	Average	Projection	Projection	Projection
	1990	2000	2005	Increase	2013	2018	2028
				Per year			
Tontitown	460	942	1,812	90	2,534	2,984	3,885

The large discrepancy between these estimates is attributable to a surge in platted lots and new dwelling units in Tontitown and the assumption that these lots and dwelling units translate directly into population. In reality, the absorption of lots and homes by the residents occurs over time.

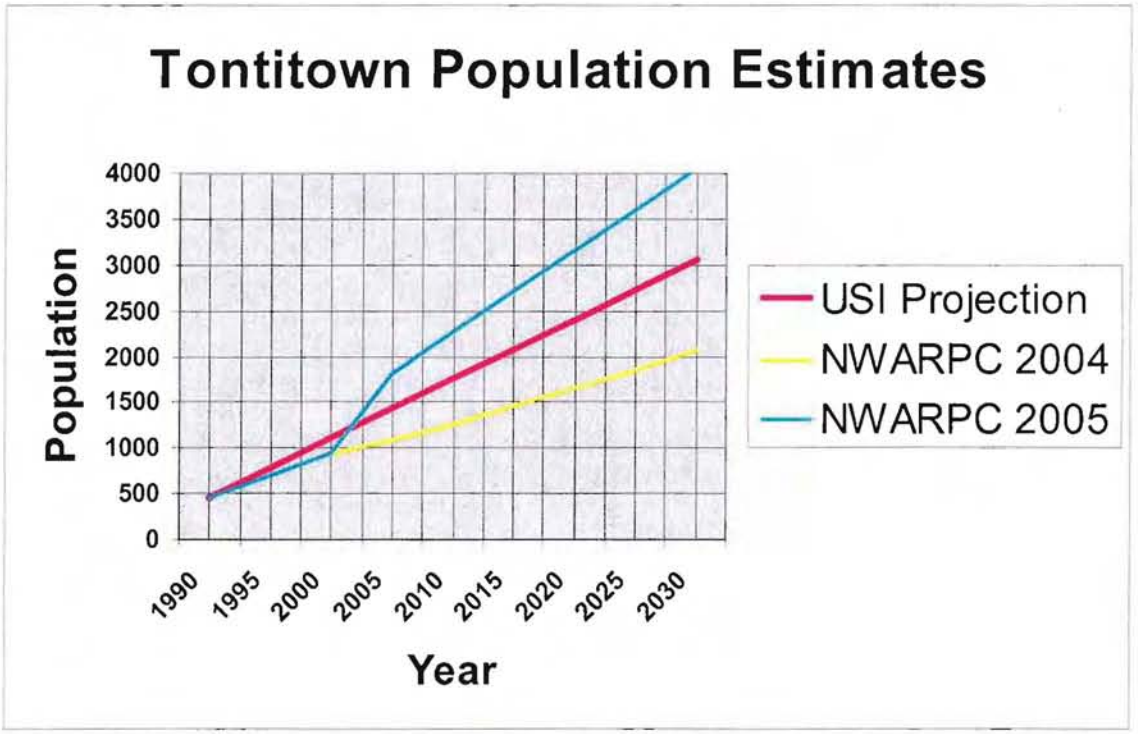
The population projection to be used in this report falls between the two extremes listed above and more closely reflects recent growth as indicated by water use. The projection used will estimate the 2005 population at 1,435 and will increase along a straight-line growth rate of 65 residents per year. This population growth scenario will form the basis of the water demand projections contained in this section.

Because of the volatile nature of population expansion in our region, a close watch of factors indicating population growth should be maintained and population and water demand projections should be re-visited often and adjusted if necessary during the planning period covered by this study.

TABLE 200-3

City	Census	Census	Est.	Average	Projection	Projection	Projection
	1990	2000	2005	Increase	2013	2018	2028
				Per year			
Tontitown	460	942	1,435	65	1,760	2,085	2,735

Figure 200-1



C. Water Demand Projections

Historical data of actual water usage has been compiled from records provided by the Tontitown City Staff, dating from 1999 to present. Tontitown's average daily water usage has increased from 188,000 gallons in 1999 to 242,000 gallons in 2007, an increase of 29%. This is a sizeable increase for such a short sample period and reflects the rapid growth experienced by Tontitown in recent years.

The average day water usage will be calculated based on the population estimate above and applying an assumed usage rate of 150 gallons per resident per day. Applying this approach to 2007, the projected average day water use would be calculated at 234,750 gallons. Actual average day use for 2007 was 242,123 gallons based on known water demand records.

Recorded water usage information suggests the peak day usage for Tontitown has ranged from 1.75 to 2.25 times the average day consumption not including any peak demands imposed by water usage at the AEP Mattison Power Plant.

For the purposes of projecting peak day demands versus average day, a factor of 2.16 will be used. It is the documented ratio of peak day demand vs. average day demand from 2007 records.

Figure 200-2 and 200-3 below illustrate the projections for the average day and peak day demands consistent with the figures above. The graphs also contain information related to a "High-Growth" scenario in the event that population growth outpaces the rate projected and used in this report. The High-Growth scenario assumes a straight-line growth of 90 residents per year.

The maximum day graph contains water usage associated with operation of the Mattison electric generation facility. The amount shown assumes 600 gpm use by the facility for 12 hours. The purpose of the facility is to provide supplemental electric power or "peaking power" during periods of high electric usage; therefore it is very likely that the facility would be in operation on the peak water usage day. The greatest demand for the two commodities (water and electricity) typically occur for the same reason, hot, dry weather.

Maximum hour flow rates are not indicated on the graphs but are summarized in Table 200- 4 in this section. The maximum hour is calculated as 3.8 times the average day demand.

Figure 200-2

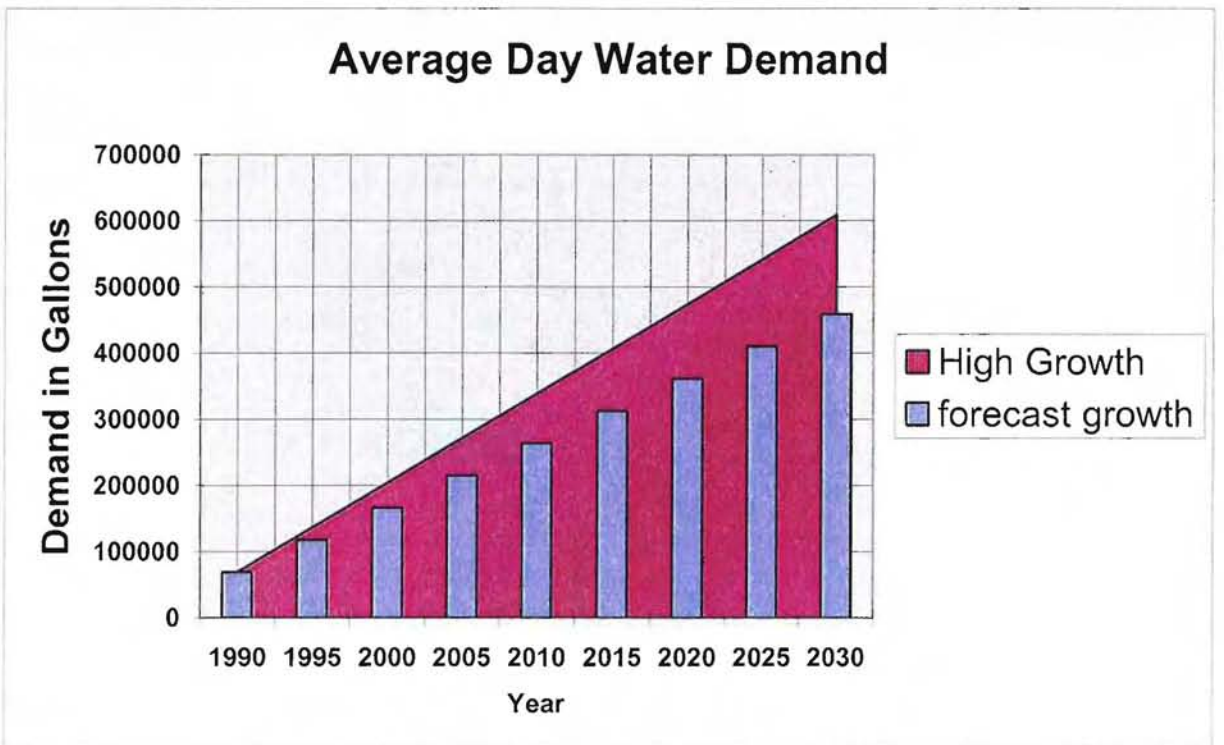
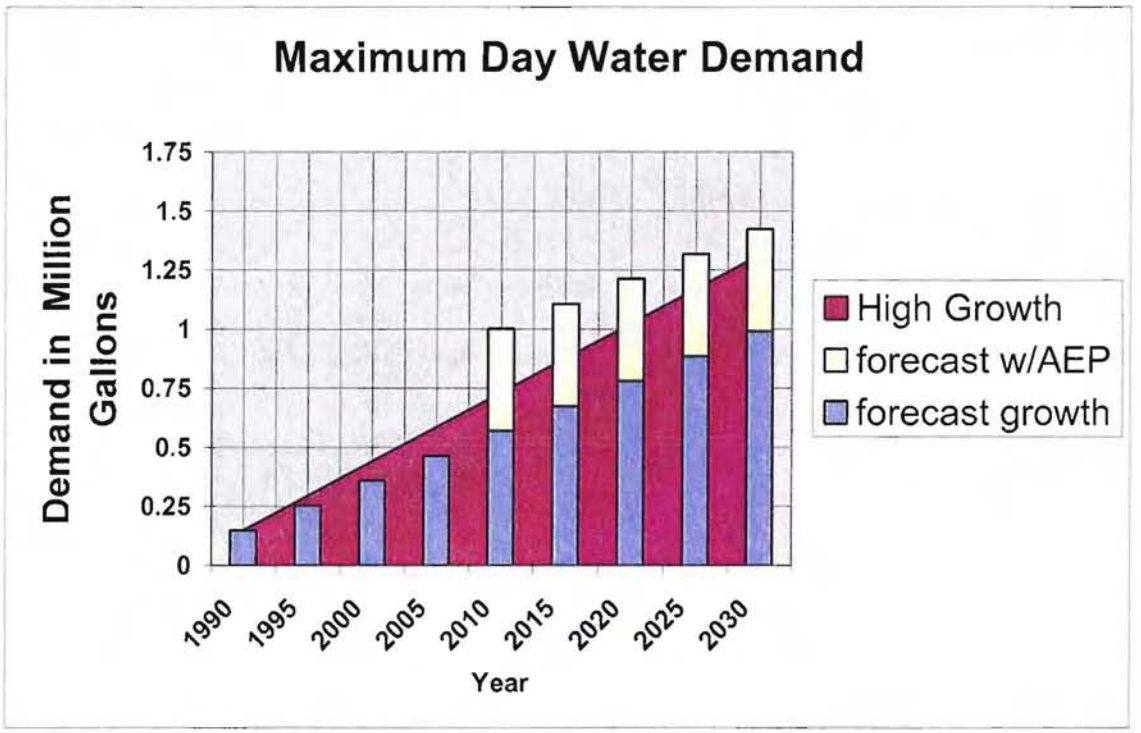


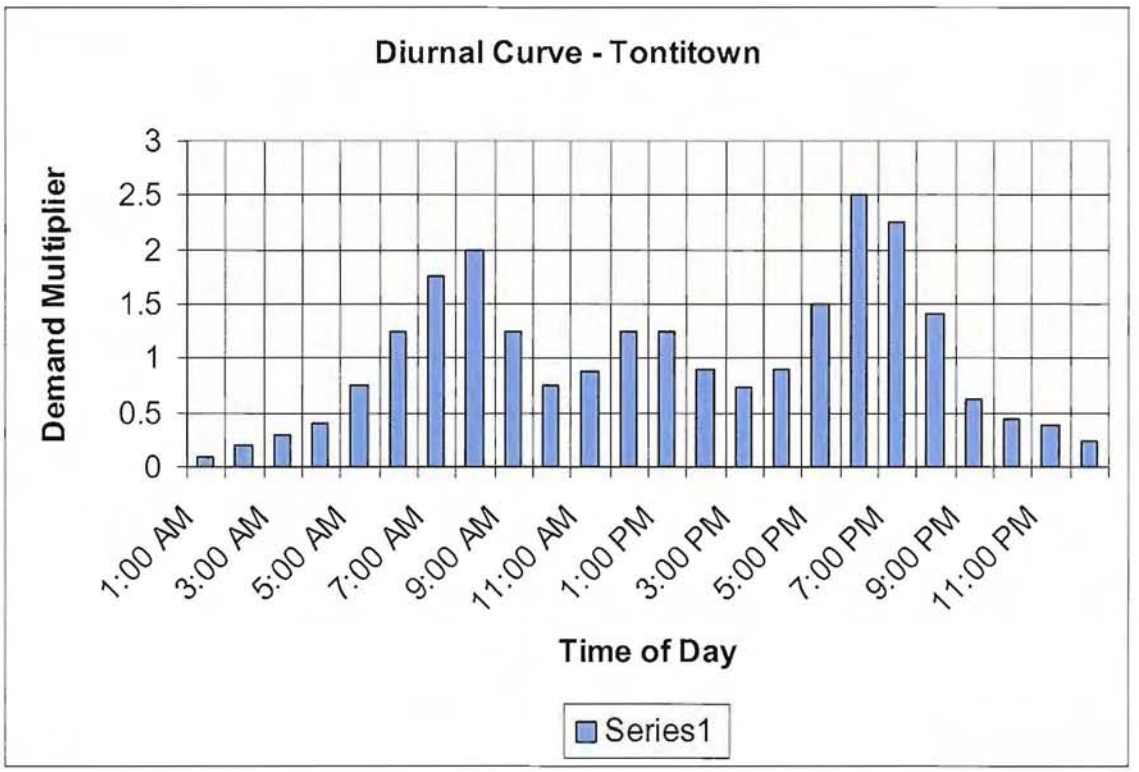
Figure 200-3



Another aspect of daily water use in a system is the variation of demands within a given day. The fluctuation of a system's demand can be illustrated by a diurnal curve. Basically the diurnal curve represents demand variations throughout a typical day, hour by hour. Water demands typically peak during morning and early evening hours corresponding with increased domestic use and likewise are much lower during late night and early morning hours.

Figure 200 – 4 illustrates a city wide diurnal curve that would be applicable for Tontitown. The curve is typical for water systems with a largely residential user base. If and when real time metering information becomes available through upgrades to the Tontitown system control and data acquisition system (SCADA), it will be possible to create a diurnal curve specifically for the Tontitown system.

Figure 200 - 4



D. Fire Flow Demands

The most extreme demand placed on a water distribution system occurs during fire flow conditions when a single or multiple fire hydrants are placed into service concentrating a large water demand in a small section of the system.

The distribution system should be capable of delivering the following fire flows concurrent with the peak day demand and maintain a residual pressure of 20 psi:

Commercial and Industrial – 2500 gpm
Light Commercial – 1500 gpm
Residential – 1000 gpm

Computer simulations of fire flow conditions are shown in Appendix E of the report.

E. Demand Summary

The water usage in Tontitown has shown rapid growth in a relatively recent time frame reflecting the overall trend in Northwest Arkansas in the past 15 years. The population and usage projections in this section are summarized below in table 200-5 and will be used in the computer simulations of Tontitown's water distribution system.

Figure 200-5

	Current	2013	2018	2023
Average Daily Demand	0.242 MGD	0.264 MGD	0.313 MGD	0.410 MGD
Peak Daily Demand	0.522 MGD	0.570 MGD	0.675 MGD	0.886 MGD
Peak Hourly Demand	0.920 MGD	1.0 MGD	1.19 MGD	1.56 MGD
Peak Daily Demand w/ AEP	0.954 MGD	1.0 MGD	1.11 MGD	1.32 MGD
Peak Hourly Demand w/ AEP	1.78 MGD	1.86 MGD	2.05 MGD	2.42 MGD

SECTION 300 – DISTRIBUTION SYSTEM

A. Existing System

The City of Tontitown's current water distribution system contains the following components.

- 23.2 Miles of 8" Waterline
- 12.7 Miles of 6" Waterline
- 3.4 Miles of 4" Waterline
- 9.2 Miles of 3" Waterline
- 5.2 Miles of 2" Waterline
- 255 Valves
- 186 Fire Hydrants
- 1 – 8" Source Water Meter *
- 1 – 3" Source Water Meter *
- 1 – 6" Source Water Meter *

* Meters owned and maintained by Springdale Water Utilities

A map of the existing distribution system has been provided in Fig 300-1 on the following page. This section of the report will briefly discuss system attributes and the operational aspects.

B. Pressure Gradient and Water Supply

Tontitown operates on a single pressure plane, meaning that the variations in water pressure throughout the system are not of a magnitude that would require separate zones of pressure for customers in different areas of the city.

The current water source for Tontitown is from Springdale Water Utilities (SWU) under a wholesale purchase contract. Water is supplied primarily through an 8-inch meter located near the intersection of Jones Road and Henri de Tonti Blvd (U.S. 412). Two other supply points are connected to the Springdale system and contain 6-inch and 3-inch meters with the 3-inch meter currently out of service.

The pressure gradient available from SWU varies from a maximum of El. 1518 representing the SWU system overflow elevation and a normal minimum of El. 1510. The actual minimum delivery gradient present from SWU at any given time could be somewhat lower than the normal minimum stated above depending on demand in the SWU system. Based on field measurements El. 1505 was used for modeling.

The large majority of water entering the Tontitown system from SWU is delivered through the 8-inch meter described above. Capacity for substantial flow exists at the 6" meter at Maestri Road and Kissinger Road, however, it is under utilized in the present distribution system configuration at this time due to smaller diameter lines in the system downstream from the meter. As mentioned above, the 3-inch meter at Barrington Road and Maestri Road is out of service at this time.

The water supply will be addressed in more detail in section 400 of this report.

C. Water Storage

Currently Tontitown does not have water storage capability within its distribution system, and relies on uninterrupted service from Springdale Water Utilities to meet demand fluctuations. Storage is provided in the Springdale system but it is not necessarily allocated to Tontitown. While there are no requirements to have water storage in a distribution system, it is always preferable as a source of water for peak demands, emergency service, and fire flow events.

A general criterion often used by water utilities when selecting and sizing distribution storage recommends enough storage to equal 1 average day water usage. In Tontitown's case, application of this criterion would lead to a recommendation of 250,000 gallons of storage needed presently and increasing to 500,000 gallons over the period included in this study. Water storage is addressed in further detail in Section 500 of this report.

D. Distribution System

The distribution system for Tontitown consists of line sizes from 2" to 8". Some smaller diameter pipelines exist in the system, but were not considered significant in terms of computer modeling and assessing the system hydraulically. The material of construction of the large majority of the Tontitown distribution system pipelines is polyvinyl chloride (PVC).

PVC pipe typically has a very long service life and is not subject to corrosive forces; consequently very little pipeline would need to be targeted for replacement due to age, deterioration, or obsolescence. Older water systems containing galvanized iron, cast iron, and asbestos cement lines often plan line replacement programs to phase these materials out of the system. This does not appear to be a concern for Tontitown with the possible exception of the 6" Asbestos Cement (AC) waterline along Barrington Road between Henri de Tonti Avenue and Fletcher Road, and the 8" section of AC waterline along Henri de Tonti Avenue between Jones Road and Maestri Road.

A primary supply or "trunk" section of 6" and 8" line along Henri de Tonti Blvd. was constructed of ductile iron pipe in the mid 1990's, but very likely has a remaining service life greater than the 20 year planning horizon of this report.

E. Computer Model Development

The hydraulic computer model for this study was created utilizing the H2O Map Water Suite hydraulic modeling package developed by MWH. The Tontitown model has previously been created by USI, and simulations of the distribution system have been performed in the past. For the purposes of this study, the model was simply updated and placed into service modeling the current and future conditions consistent with the master plan recommendations. Details of the computer simulations and results will be presented in more detail in Appendix D of the report.

SECTION 400 – WATER SOURCE EVALUATION

A. Introduction

Tontitown has long been a wholesale customer of Springdale Water Utilities (SWU) for the supply of potable water. SWU is a charter member of the Beaver Water District and is authorized by the District to resale water to wholesale customers under whatever agreement can be reached between the purveyor (SWU) and the wholesale customer.

The current contract between Tontitown and SWU is for five years beginning July 7, 2004 and expires on the same date in 2009. The contract prohibits Tontitown from inter-connecting the Tontitown distribution system to any other water supply source during the term of the contract.

As of the date of this report the Tontitown Water and Sewer Commission and Springdale Water Utilities are negotiating a new water purchase contract.

B. Existing Supply

As mentioned above, the existing water supply for Tontitown is from Springdale Water Utilities under an existing contract, which is included as Appendix A of the report. Water is metered into the Tontitown distribution system at three locations, an 8-inch meter at Jones Road and Henri de Tonti Blvd., a 3-inch meter at Arkansas Hwy 112 and Barrington Road, and a 6-inch meter at Arkansas Hwy 112 and Kissinger Road.

The water supplied to Tontitown originates from Beaver Lake and is treated and distributed by the Beaver Water District (BWD) for consumption by the charter member cities of the BWD. Under the current by-laws, only the four charter member cities of Fayetteville, Springdale, Rogers, and Bentonville are eligible to purchase water directly from BWD. This restriction precludes any exploration of a direct purchase agreement between Tontitown and the Beaver Water District.

Service to the Tontitown system from SWU has historically been delivered at adequate pressures and volumes to allow Tontitown to operate a safe, efficient, and fire-flow rated distribution network. As water demand increases, it may become necessary for SWU to construct certain improvements to continue to provide the current level of service enjoyed by Tontitown or to restrict water usage by the Tontitown system. The costs of improvements, if necessary and constructed for this purpose, will likely be reflected in increased wholesale rates and consequently a likelihood that rates would increase to the end user. This possibility will be addressed in greater detail later in this section.

C. Alternative Supply

The Benton-Washington Regional Public Water Authority (BWRPWA) supplies wholesale water to a number of cities and rural water authorities encompassing a broad geographic area of western Benton County, and western Washington County in Arkansas,

and extreme eastern Adair County in Oklahoma. The source water for BWRPWA is Beaver Lake, and water treatment facilities are located near Avoca, Arkansas.

The entities purchasing water from BWRPWA are fed from a large diameter transmission pipeline once called the "Two-Ton Loop". This transmission line runs from north to south in northern Washington County and crosses Arkansas Hwy. 412 at a point 7.25 miles west of the current Tontitown city limits.

Because of this proximity and the possibility of an additional transmission line to the Washington Water Authority (WWA) along the U.S. Hwy 412 corridor, it is possible for Tontitown and BWRPWA to consider negotiations aimed towards reaching mutually acceptable terms for provision of wholesale water by BWRPWA for purchase by Tontitown.

As of this report, the extension of a new line by either BWRPWA or WWA to connect to the WWA line designated Wildcat Creek 18-inch, is seen as a long-range plan (6-10 years). The project was included in the Capital Improvements Program that formed the basis of the latest rate adjustment for wholesale water from BWRPWA, and so in a sense, the project is funded. Any consideration of a direct tie-in to the BWRPWA system would only warrant serious consideration at a future time when such plans might be more fully engaged; however, discussion between the Tontitown Water and Sewer Commission and BWRPWA would be a productive step.

A connection between the Tontitown system and WWA is another option that should be considered; however, it is doubtful the WWA would be capable of delivering the required capacity, and based on comparative cost of water figures below, this does not appear to be a particularly realistic option at this time.

D. Basis of Comparison

Both Springdale Water Utilities and the Benton Washington Regional Public Water Authority appear to be viable options for consideration as a potable water purveyor for the needs of the Tontitown water system. The possibility could also be considered for having connections to both providers as an additional safeguard in emergency conditions.

If the assumption is made that either entity can provide equally preferable water quality and equally acceptable delivery pressures and locations, the decision as to which might be better for Tontitown becomes driven primarily by costs.

E. Water Quality

A copy of the water quality report known as the "Consumer Confidence Report" is provided for the Beaver Water District and for the Benton Washington Regional Public Water Authority in Appendix B of this report. The differences in water quality between the two providers can be compared along equal lines using this standard report.

The reports do not consider the overall taste and odor of the finished water nor any seasonal fluctuations in taste and odor that may occur.

F. Delivery Pressure

As stated earlier in this report, the hydraulic gradient of the Springdale Water Utilities' system ranges from 1510 to 1518. The delivery gradient at the metered sites will often be slightly lower than this range due to head loss in the SWU system under operating demands.

An estimate of the gradient available from the BWRPWA has been calculated based on a hypothetical connection and feed line, and on existing known data from the BWRPWA system. For purposes of this report, the delivered gradient from BWRPWA is estimated at El. 1478. This gradient is calculated based on a 1490 gradient available from BWRPWA, 7.25 miles of 24" transmission feed to a Tontitown metering point, a flowrate of 1.56 MGD, and a C factor of 120. This gradient (1478) should be attainable in the given scenario.

It should be noted that this connection would result in a lower gradient than is now delivered by the SWU system. This would result in slightly lower pressures (10 – 12 psi) in all demand scenarios as they are modeled in this report.

G. Cost

SWU

At present, the cost of water purchased by Tontitown from Springdale Water Utilities is $2.22 per 1000 gallons. The rate is indexed from an annual audit of the SWU system to establish the "unit cost of water" and the rate to Tontitown is established at 15% above the figure derived from the audit data.

The rate is adjusted annually based on the findings of the audit.

BWRPWA

The by-laws of the BWRPWA stipulate that all wholesale customers or "members" of the Authority pay equal rates per 1000 gallons of water purchased. At present, the rate charged to members of the Authority is $2.05 per 1000 gallons. This rate is also subject to adjustment based on expenses incurred by the Authority in any given year.

There are no restrictions on the amount to be charged by BWRPWA in member agreements.

For Tontitown to connect to BWRPWA, certain improvements to both the Authority and to the Tontitown system would be required. The cost of these improvements on an annualized basis can be added for comparison purposes to the base rate (as it exists) for

members. Tontitown's costs would be assumed to be the cost of connecting to the Wildcat Creek Rd. delivery point, approximately 1.5 miles from the existing Tontitown distribution network, this cost is estimated to be $1,075,000.

Excluding the costs for the improvements listed above, and using the projected demands for Tontitown for 2010, the effective rate per 1000 gallons from the BWRPWA would be $2.05, assuming no other increases.

H. Conclusions

Based on the comparisons above, it can be concluded that viable alternatives for source water purchased are available for Tontitown. The course of action followed by the Water and Sewer Commission is a decision that can only be made by the Commission and this section of the report will advance no recommendation or favor one system over another in any way.

The data listed above is intended as a factual basis to go forward with negotiation with one or both of the purveyance entities to reach an agreement in the best interest of the Tontitown Water and Sewer Commission and its customers.

SECTION 500 – EVALUATION OF STORAGE REQUIREMENTS

A. Introduction

As water distribution systems increase in size and complexity, the need for reliable and available supply points becomes more important in keeping the system balanced under varying conditions. If you think of the hydraulic pressure plane of distribution system as a canvas tent, the supply points are the tent poles that support and maintain the pressure in the remainder of the system. The greater the distance from the stabilizing effect of supply points the more susceptible the system becomes to friction losses during high flow periods.

The Tontitown distribution system is still relatively small, and demands can be met by the source feed from Springdale Water Utilities. As demands increase, and particularly as peak demands increase, it becomes more important to have the ability to supplement peak flow periods and fire flow demands. Recent discussions with Springdale Water Utilities suggest that peak water use restrictions and penalties for excessive peak use are likely to be included in the next purchase contract between the SWU and Tontitown. Available storage meets the requirements of moderating peak flow demands and also acts as a supply point for the distribution system hydraulically during periods when the tank is discharging to the system.

B. Ground vs. Elevated Storage

In January 2007 an engineering study was conducted by USI and presented in a letter report to the Tontitown Water and Sewer Commission. A portion of this report was an analysis comparing ground storage facilities to elevated storage facilities; the letter report is attached as Appendix C.

The study concluded that while the capital costs are greater for an elevated tank, the net present worth value when pumping facilities and annual costs are considered negates the initial savings of the ground storage tank construction.

C. Current Need for Storage

As stated above the recent negotiations with Springdale Water Utilities indicate a pressing need for storage capability within the Tontitown system to avoid possible flow restrictions and/or penalties for excessive peak usage. For this reason the construction of storage is warranted as soon as possible to meet possible future restrictions in 2009 when the water purchase contract is renewed.

Storage will provide system redundancy, enhance fire flow, and lessen the effect of peak demands on the SWU system. All of these factors combine to create a more robust and reliable distribution system.

D. Long Term Need for Storage

Depending on population growth and water usage demand, the need for distribution storage will continue to become more acute, both from Tontitown's standpoint and from the wholesale suppliers standpoint, as peak demands continue to have greater impact on both systems. The Near Term (1-5 year) plan for Tontitown includes 500,000 gallons of elevated storage located in the vicinity of Pianalto Road. The plan and costs associated with this installation will be outlined in Section 800 of the report.

SECTION 600 – POLICIES AND PROCEDURES

A. Introduction

The expansion of any water distribution network is driven by the need (real or perceived) for water. This may be in the form of residential development, industrial uses, fire protection, irrigation, or a combination of these. The City or Water Utility typically does not generate the majority of these needs; they come rather as the result of development within the area served by the Utility.

For distribution system expansion to be orderly and conform to the overall plan and goals of the utility, developers adding to the water infrastructure should do so in a way that not only meets the requirements of the development, but also those of the system.

This section will outline some of the methods available to water utilities to ensure that development needs and utility needs are not at cross-purposes.

B. Minimum Line Size

The Tontitown Water and Sewer Commission should consider adopting a policy establishing a set of guidelines for minimum pipeline diameter for new construction within the utilities' distribution system. The policy should require a minimum 8" diameter waterline, with possible exceptions only as approved by the Commission or its assigns. Exceptions could be the use of 6" lines in interior applications when the 6" line is connected on each end to an 8" line. 4" waterlines should only be considered for approval in cul-de-sac applications and only when fire protection is available to the cul-de-sac from a larger line. Lines smaller than 4" should not be allowed for new construction within the public system.

Service lines should be minimum 1" diameter.

This policy is in general agreement with the City of Tontitown Water and Sewer Standard Specifications.

C. Ordinal Extensions

To ensure that the distribution system can achieve connectivity as future development occurs, a policy should be considered to require development to provide an 8" line extension to the property line of the development in all four ordinal directions unless water service is already provided outside the boundary in a particular direction. Exceptions to this policy could be made at the discretion of the Commission if it determines that there is no practical value to the utility of such an extension.

D. Compliance with Master Plan

As new development occurs in areas where master planned facilities are defined, a policy should be considered for requiring the master planned improvement to be constructed by the developer. For example, a developer with frontage along a planned improvement route would be required to install the proposed improvement regardless of whether or not it necessarily benefited the development. Payment for this type of improvement would be a matter of decision for the Commission prior to adopting such a policy.

E. Capacity Fees

The demand pressures directly attributable to new development often bring about the necessity of capital improvements to a water system, such as storage facilities and trunk water mains. The expenses of these improvements are typically borne by the customers of the utility in the form of rate increases.

The assessment of impact or capacity fees is a method of offsetting these expenses and insulating the ratepayer from the cost of development demands on the system. This approach has gained acceptance in high growth areas and should at least be considered if development pressure on the infrastructure outpaces the revenue available from rates.

F. Summary

Tontitown has a very sound and serviceable water distribution system in place presently and accordingly, the potential for further expansion of the system is great. The policies and procedures above are submitted for consideration as methods that could be employed by the Water and Sewer Commission to guide the development community. By exercising clear and reasonable requirements for infrastructure expansion, the utility can continue to provide a strong water infrastructure at an affordable rate.

SECTION 700 – SERVICE AREA

A. Introduction

To avoid water utilities coming into direct competition for customers, it is common for municipalities and other water utilities, such as rural authorities, to establish service boundaries. These geographic boundaries are put in place to designate which utility is responsible for providing water service in an area when it is requested.

Municipal water utilities naturally prefer to serve all customers within their city limits. This ensures that the public is provided the full range of services offered by the municipality. In some cases, as cities grow in area, the city limits expands into service territory occupied by another utility.

In these overlapping scenarios, negotiations must take place so the utilities in conflict can come to reasonable and mutually acceptable terms.

B. Tontitown Service Area

Figure 700-1 depicts the service area of Tontitown as it was established in 1997. It is clear from the mapped areas that the city limits of Tontitown have expanded well beyond the established service area. Figure 700-1 shows the service boundaries established by the Washington Water Authority (WWA). The areas in blue represent the lands that are within both the service area of the WWA and within the city limits of Tontitown.

C. Arkansas Water Plan

The Arkansas Natural Resources Commission (ANRC) regulates service area boundaries through a program known as the Arkansas Water Plan. In this program, projects meeting a certain set of criteria are required by law to seek and receive Water Plan compliance before being constructed. Only one of the projects contemplated in this report (the election to change water sources) would warrant Water Plan compliance individually, however, Section V of the rules governing the Plan includes Master Plans as an item for Water Plan compliance review by the Agency.

LIBERTY AVE

N PIANALTO RD

S PIANALTO RD

ARDEMAGNI RD

BARRINGTON RD

W HENRI DE TONTI BLVD

S MAESTRI RD

WILD CAT CREEK WC 851

KELLY AVE

Clear Water Road

Tank #12

LEGEND

- Existing Tontitown Water Line
- Future Tontitown Water Line
- WWA 18" Water Line
- WWA 8" Water Line
- WWA 6" Water Line
- WWA 4" Water Line
- WWA 3" Water Line
- WWA 2" Water Line
- Proposed 8" Water Line
- WWA 6" W/L Taken Into Tontitown System
- WWA 4" W/L Taken Into Tontitown System
- WWA 3" W/L Taken Into Tontitown System
- WWA 3" W/L Taken Into Tontitown System
- Tontitown City Limits
- Service Area Boundary 1997
- Areas Within City Limits of Tontitown and Within Washington Water Authority Service Boundary

N

3000 0 3000 FEET

CITY OF TONTITOWN
CITY LIMITS AND SERVICE BOUNDARY

TONTITOWN WATER SYSTEM

USI Consulting Engineers Springdale, Arkansas

JOB	DATE	SCALE	DRAWN	CKD	SHEET
0809012.01	03/26/08	1" =3000'	HQ	BRV	1/1

SECTION 800 - RECOMMENDATIONS

Based on the projected needs for the Tontitown distribution system, and supported by H2Omap analyses performed, USI has developed recommendations to maintain and improve pressures and available fire flows through the study horizon of 20 years to 2028. The recommendations have been prioritized and placed into the following three categories:

- Near Term (1-5 years)
- Intermediate Term (6-10 years)
- Long Term (11-20 years)

The following section details the recommendations and presents opinions of probable costs, including engineering costs and contingencies, in 2008 dollars.

A. Near Term Needs 1-5 years

In general, the Tontitown distribution system is very sound and has the capabilities necessary to provide reliable service including fire service to its customers. The addition of the Mattison power generation facility and its subsequent demand will require improvements in the near term to maintain this reliability.

In Section 500 reference was made to ongoing negotiations with the Springdale Water Utilities (SWU). It is apparent from the potential restrictions proposed by SWU that system storage is a top priority for Tontitown to avoid any restrictions of water use and/or penalties for excessive water demand.

As mentioned in Section 300 of this report, the supply connection to the Springdale Water Utilities system near Kissinger Road is currently under utilized. To make optimum use of this connection, an 8" line should be constructed from the metering point to connect to an existing 8" line at Piazza Road as shown in Figure 800-1. This improvement creates a southern loop of larger diameter lines that not only enhances the existing system, but also establishes a strong base for any future expansion of the system to the south and/or west.

Another Near Term need identified involves water service reliability to the aforementioned Mattison generation facility. The plant has the potential for up to 600 gpm continuous demand and is currently connected to the Tontitown system by a single looped feed line. To provide more reliable service and to mitigate the effects of this large demand user on the Tontitown system, it is recommended that an 8" line be constructed from Henri de Tonti Blvd. north to Liberty Road, creating a double loop in the vicinity. The benefits of this arrangement hydraulically will be demonstrated in discussion of the computer modeling results.

There are two sections of pipeline shown in Figure 800-1 that should be considered for replacement. The first is the 8" Asbestos Cement (AC) line from the Jones Road

metering station west to Maestri Road (Hwy 112). The second candidate is the 6" AC line from Henri de Tonti Blvd. South to E. Fletcher Road. The need to upgrade and replace these pipelines is twofold: 1) each line is strategic in regards to needed capacity in future scenarios and therefore should be upsized accordingly, and 2) the replacement of these pipelines eliminates Asbestos Cement lines from the Tontitown system, thereby eliminating the need for AC repair inventory.

In the five-year period designated herein as Near Term Improvements, the Tontitown Water and Sewer Commission should begin a systematic expansion of its approved service area within the City limits of Tontitown. This approach should be made in an effort to provide Tontitown residents water and sewer service without disputes and delays, which might arise if service territory issues remain unresolved.

In conjunction with the construction of the Kissinger Road waterline proposed in this section, negotiations should be entered with the Washington Water Authority (WWA) aimed at extending the Tontitown service boundary 3000' south of and parallel to the existing limit, all within the Tontitown city limits. This will likely require the purchase of some existing WWA pipelines and customers, and these arrangements should be the focus of active negotiations between the Utilities.

Also, it is possible that construction work could begin on the proposed Arkansas Highway 412 By-pass within the five-year horizon. Once constructed, this corridor will present construction, logistical, and connectivity challenges to the Tontitown utility system. To mitigate these challenges, it is suggested that large diameter encasement pipes be constructed in strategic locations along the by-pass route. Each encasement placed prior to construction will potentially save a much greater expense to bore and encase a future pipeline.

Although the addition of elevated storage to the distribution system is included in the next planning period (Intermediate Term), a Near Term capital item is included below for securing the site for construction of that facility. Since the proposed location is known, it is a prudent option to secure the site at current land value thereby avoiding the potential of losing the location to other uses. Should plans change in the future, there is little risk in owning the site, which will likely retain its value as a liquid asset. A 2-Acre site is preferable for the project.

Summary Near Term Needs (1-5 years)

Table 800-1

Improvement Project	Priority	Type	Length	Probable Cost
500,000 gallon elevated storage tank, connecting lines, and SCADA.	1	Steel Spheroid Tank and 12" D.I. connection		$1,960,000
Purchase Storage Tank Site	1a		2 Acres	Market
Harmon to Liberty Waterline	2	8" D.I.	7000 L.F.	$235,000
Kissinger Road Waterline	3	8" D.I.	2640 L.F.	$655,000
412 Encasement Pipes	4	18" steel	1000 L.F. (total)	$100,000
Re-establish 3" meter connection, RTU install for SCADA	5			$6,000
412 Feed Line Replacement Jones Rd. to Maestri Road	6	12" D.I.	2600 L.F.	$275,000
Barrington Road Line Replacement Henri de Tonti Avnue to Fletcher Road	7	8" D.I.	2650 L.F.	$240,000
Service Area Expansion and purchase WWA	8	N/A	Negotiable	Negotiable

B. Intermediate Term Needs (6-10 years)

There are three waterline sections that will significantly boost the interior sections of the distribution system and provide for multiple flow paths from east to west as the system expands away from the source, (or from west to east should Tontitown elect to change wholesale providers).

At present, the line along Klenc Road is a combination of 2" and 3" sections that provide very limited hydraulic capacity or fire protection capability. This area is zoned primarily R-2 and R-3, and has great potential as a residential development area within Tontitown. These factors provide the basis for a recommendation to construct an 8" waterline along Klenc Road from Henri de Tonti Avenue to Kelly Avenue. As a master planned improvement, it is also recommended that if and when any development is contemplated along Klenc Road, the master plan should be referenced as a guideline.

As a companion project to the Klenc Road waterline, an east-west connector is recommended for construction between Barrington Road and Bausinger Road, as shown on Figure 800-2. This construction enhances the east-west flow paths and bolsters fire protection capability in this area as growth occurs.

To complete the expansion westward of the distribution system and create looped feeds, a line extension along Wildcat Creek Blvd. from Pianalto Road to Harmon Road and then north to Henri de Tonti is recommended as shown in Figure 800-2. This line would replace a 3" loop already in place along this route, which is adequate now, but will be too small to provide fire rated service as development and population increase in this vicinity.

Depending on the extent of city limits during this planning period (6-10 years), it is recommended that the Tontitown water service area be expanded to match the city limits in all locations and that negotiations with other providers continue towards this goal.

Summary Intermediate Term Needs (6-10 years)

Table 800-2

Improvement Project	Priority	Type	Length	Probable Cost
Klenc Rd. Waterline	1	8" D.I.	7,000 L.F.	$620,000
Barrington Rd. to Bausinger Rd. Waterline	2	8" D.I.	8,000 L.F.	$705,000
Wildcat Creek Blvd. / Harmon Rd. Waterline	3	8" D.I.	10,560 L.F.	$935,000
Service Area Expansion and purchase WWA	4	N/A	Negotiable	Negotiable

C. Long Term Needs (11-20 years)

In the climate of change that has defined Northwest Arkansas in the most recent 20 years of history, it is difficult to forecast what will be required in the period from 2018 to 2028. But it does not diminish the need to plan and set forth reasonable expectations of improvements that may be required in a longer term look ahead.

The provision of independent sewer service in Tontitown and the network of facilities associated with the Northwest Arkansas Conservation Authority (NACA) wastewater treatment plant create an atmosphere conducive to residential and commercial growth. This is especially true in the northern section of Tontitown where the wastewater infrastructure will be firmly established during this planning period.

As development occurs in the northern areas of Tontitown it will become necessary to strengthen the water distribution network accordingly. A "northern loop" 8" pipeline is depicted in figure 800-3.

The configuration of the distribution system, and in fact the configuration of the commercial corridor in Tontitown, establishes Henri de Tonti Blvd. (Arkansas Highway 412) as the "backbone" of the system. This holds true regardless of the source provider chosen by the Commission in any subsequent future year. Currently this route is an amalgam of 8", 6", and 3" lines in several parallel and single configurations.

A Long Term goal should be the consolidation and upsizing of this route to a 12" main.

When accomplished a 12" main will provide the trunk capacity needed to support the many 8" lines that originate from or connect to the Henri de Tonti corridor.

Summary Long Term Needs (10-20 years)

Table 800-3

Improvement Project	Priority	Type	Length	Probable Cost
Northern Loop.	1	8" D.I.	17,500 L.F.	$1,550,000
Henri de Tonti Trunk Line Upgrade	2	12" D.I.	21,500 L.F.	$2,275,000

Proposed 8" Water Line

Proposed 500,000 Gal. Water Tank and 12" Water Line (Site To Be Determined)

Proposed 8" Water Line, Remove Existing 6" Water Line

Proposed 12" Water Line, Remove Existing 8" Water Line

Master Meter

Master Meter

Proposed 8" Water Line

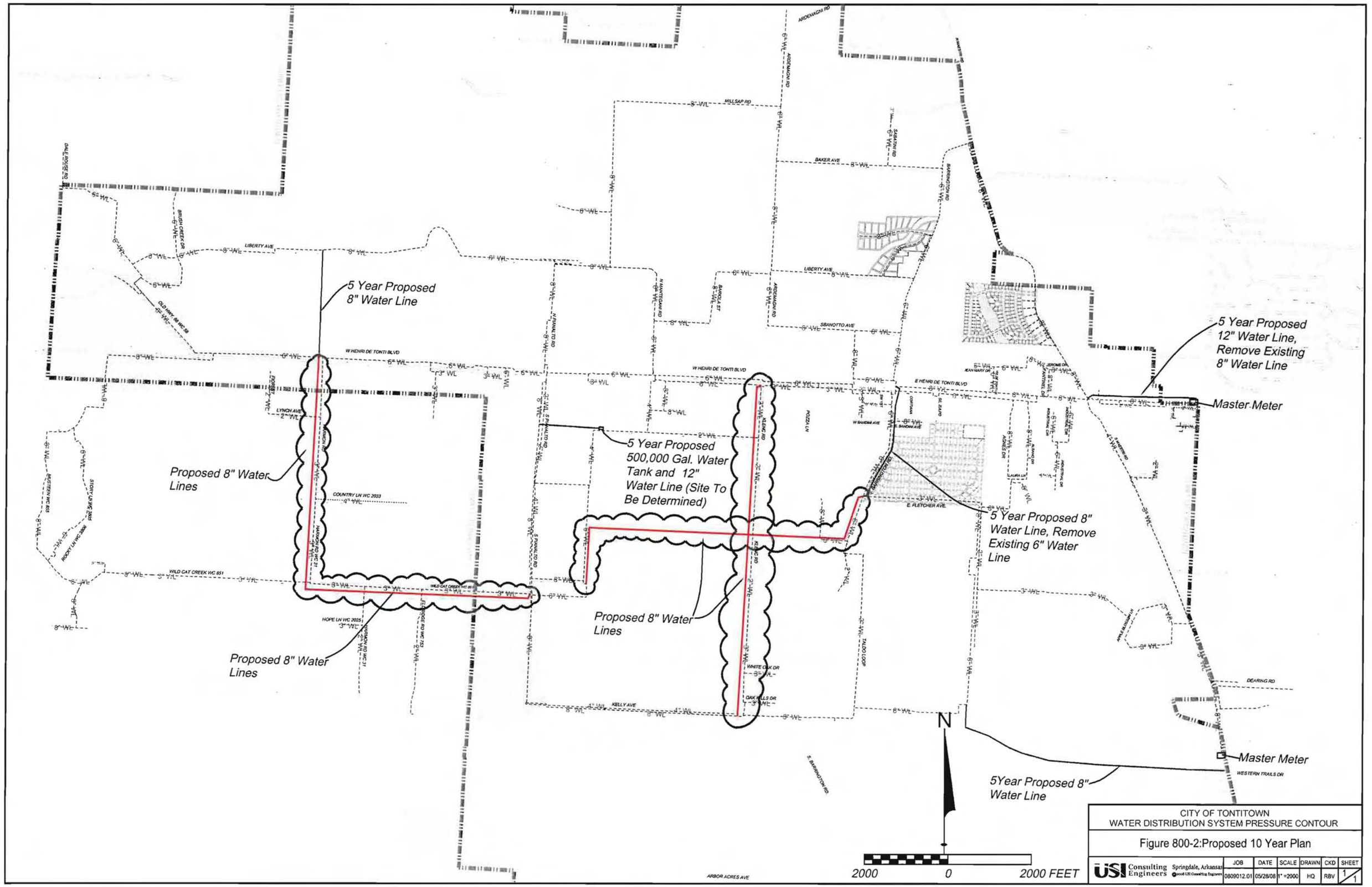
N

2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR

Figure 800-1:Proposed 5 Year Plan

USI Consulting Engineers Springdale, Arkansas	JOB	DATE	SCALE	DRAWN	CKD	SHEET
	0809012.01	05/28/08	1" =2000	HQ	RBV	1/1


5 Year Proposed 8" Water Line
5 Year Proposed 12" Water Line, Remove Existing 8" Water Line
Master Meter
Proposed 8" Water Lines
5 Year Proposed 500,000 Gal. Water Tank and 12" Water Line (Site To Be Determined)
Proposed 8" Water Lines
Proposed 8" Water Lines
5 Year Proposed 8" Water Line, Remove Existing 6" Water Line
Master Meter
5Year Proposed 8" Water Line
N
2000 0 2000 FEET
LIBERTY AVE
W HENRI DE TONTI BLVD
E HENRI DE TONTI BLVD
SBANOTTO AVE
BAKER AVE
MILLSAP RD
ARDEMAGNI RD
S BARRINGTON RD
KELLY AVE
E FLETCHER AVE
DEARING RD
WESTERN TRAILS DR
ARBOR ACRES AVE
WILD CAT CREEK WC 851
COUNTRY LN WC 2033
HOPE LN WC 2025
WHITE OAK DR
OAK HILLS DR
CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR
Figure 800-2:Proposed 10 Year Plan
USI Consulting Engineers Springdale, Arkansas
JOB 0809012.01 | DATE 05/28/08 | SCALE 1" =2000 | DRAWN HQ | CKD RBV | SHEET 1/1

Proposed 8" Water Line

Proposed 12" Water Line, Parallel to Existing Water Line

5 Year Proposed 8" Water Line

5 Year Proposed 12" Water Line, Remove Existing 8" Water Line

Master Meter

10 Year Proposed 8" Water Lines

10 Year Proposed 500,000 Gal. Water Tank and 12" Water Line

10 Year Proposed 8" Water Lines

10 Year Proposed 8" Water Lines

5 Year Proposed 8" Water Line, Remove Existing 6" Water Line

5Year Proposed 8" Water Line

Master Meter

N

2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR

Figure 800-3:Proposed 20 Year Plan

USI Consulting Engineers Springdale, Arkansas

JOB	DATE	SCALE	DRAWN	CKD	SHEET
0809012.01	05/28/08	1" =2000	HQ	RBV	1/1

EXHIBIT A

RESOLUTION NO. 23-04

WHEREAS, the Springdale Water Commission owns and operates a water supply distribution system serving the city of Springdale, Arkansas; and,

WHEREAS, the City of Tontitown owns and operates a water distribution system that requires a supply of treated water; and,

WHEREAS, the Springdale Water and Sewer Commission and the City of Tontitown have previously entered into a water purchase contract dated January 6, 1998 concerning the mutual terms and conditions for water purchased by the City of Tontitown; and,

WHEREAS, the parties desire to execute a new water purchase contract setting forth the mutual terms and conditions for which water is to be purchased by the City of Tontitown;

NOW, THEREFORE, be it hereby resolved by the Springdale Water Commission of the City of Springdale, Arkansas, that the Chairman and Secretary are hereby authorized and directed to execute a water purchase contract with the City of Tontitown; a copy of said contract is attached hereto and incorporated herein by this reference.

PASSED AND APPROVED this 22 day of June, 2004.

SPRINGDALE WATER COMMISSION

Gary C. George, Chairman

Attest:

Al Hanby, Secretary

WATER PURCHASE CONTRACT

This contract for the sale and purchase of water is entered into this 22 day of June, 2004, by and between the City of Springdale, Arkansas, a municipal corporation, acting through its Water Commission, hereinafter referred to as the "Seller", and the Town of Tontitown, Arkansas, hereinafter referred to as the "Purchaser":

WITNESSETH:

WHEREAS, the Seller owns and operates a water distribution system with a current reserve capacity capable of meeting the estimated needs of the water system operated by the Purchaser; and,

WHEREAS, the Purchaser owns and operates a water distribution system that requires a supply of treated water; and,

WHEREAS, the parties have previously entered into a water purchase contract dated January 6, 1998, and adequate facilities have been installed to provide ample delivery and metering of potable water sold to the Purchaser; and,

WHEREAS, the parties desire to cooperate to achieve a mutually satisfactory agreement:

NOW, THEREFORE, IN CONSIDERATION OF THE MUTUAL COVENANTS AND CONDITIONS HEREINAFTER SET FORTH, AND FOR OTHER GOOD AND VALUABLE CONSIDERATION, THE RECEIPT OF WHICH IS HEREBY ACKNOWLEDGED, THE SELLER AND PURCHASER HERETO MUTUALLY AGREE AS FOLLOWS:

(1) QUANTITY: The Seller agrees to furnish the Purchaser at points of delivery hereinafter specified, during the term of this contract or any renewal or extension thereof, potable water meeting applicable purity standards of the Arkansas Department of Health in such quantity as may be required by the Purchaser not to exceed ten (10) million gallons per month nor 350,000 gallons per day without the permission of the Seller.

(2) POINT OF DELIVERY: The points of delivery for water furnished by the Seller are: (a.) a meter vault located at the northwest corner of the intersection of Arkansas State Highway 412 and Jones Road; (b.) a meter vault located at the northwest corner of the intersection of Arkansas State Highway 112 and Barrington Road; and (c.) a meter vault located near the intersection of Arkansas State Highway 112 and Washington County Road 883 (Kissinger Avenue).

(3) WATER PRESSURE: If a greater or reduced pressure other than that supplied by the Seller is required by Purchaser, the cost to increase or decrease such pressure shall be borne by the Purchaser. Purchaser shall obtain written approval from the Seller prior to the installation of any equipment utilized to increase or decrease water pressure.

(4) METERING EQUIPMENT: The Seller agrees to furnish, install, operate and maintain at its own expense at the point of delivery, the necessary metering equipment for properly measuring the quantity of water delivered to the Purchaser and to calibrate such metering equipment whenever requested by the Purchaser but not more frequently than once every twelve (12) months. A meter register not more than two percent (2%) above or below the test result shall be deemed to be accurate. The previous readings of any meter disclosed by test to be inaccurate shall be corrected for the four (4) months previous to such test in accordance with the percentage of inaccuracy found by such tests. If any meter fails to register for any period, the amount of water furnished during such period shall be deemed to be the amount of water delivered in the corresponding period immediately prior to the failure unless Seller and Purchaser shall agree upon a different amount. The metering equipment shall be read monthly. An appropriate official of the Purchaser shall have access to the meters at all reasonable times for the purpose of verifying readings.

(5) BILLING AND PAYMENT: The Seller agrees to furnish the Purchaser with an itemized statement of the amount of water furnished the Purchaser during the preceding month. The purchaser agrees to pay the Seller for water delivered according to the schedule of rates set forth hereinafter and in a timely manner pursuant to the ordinances of the City of Springdale presently in effect and hereafter adopted. In the event Purchaser fails to make timely payment as provided herein, then Seller, at its option, shall give notice to Purchaser that services shall be terminated within five (5) days unless the payment is made.

(6) PRICE: It is hereby stipulated and agreed that Purchaser shall pay Seller a price for water that will be adjusted annually. The price for each thousand gallons of water, or portion thereof, metered at any of the points of delivery shall be the sum of: (1) the base monthly price as determined hereinafter in Schedule A, and (2) the fixed percentage rate set forth hereinafter in Schedule B.

Schedule A:

The base monthly price for water supplied to Purchaser is established at a rate per thousand gallons that shall be determined by Seller's annual cost to produce and deliver water. Such costs shall be determined by a certified public accountant in the preparation of Seller's annual audit. Should the Seller incur a rate increase in the cost per thousand gallons of water purchased from Beaver Water District, which increase is not reflected in the most recent annual audit, the Seller shall have the right to collect an additional rate per thousand gallons from the Purchaser equal to the increase incurred from the Beaver Water District. The Seller shall be empowered to charge Purchaser, in the base monthly price for water, the additional rate simultaneous with the time Seller is required to pay the Beaver Water District for the increased amount.

Schedule B:

A fixed rate of fifteen percent (15%) of the base monthly price, as determined above in Schedule A.

(7) CONDITIONS OF SELLER'S PERFORMANCE: The Seller agrees to operate and maintain its system in an efficient manner and will take such action as may be necessary to furnish the Purchaser with quantities of water set forth herein. Emergency failures of system pressure or supply due to water supply line breaks, power failures, floods, fires, earthquakes, or other catastrophes shall excuse the Seller from this provision for such reasonable period of time as may be necessary to restore service. Temporary or partial failure to deliver water shall be remedied with all possible dispatch. In the event of an extended shortage of water, or the supply of water available to the Seller is otherwise diminished, the supply of water to Purchaser's consumers shall be reduced or diminished in the same ratio or proportion as the supply to Seller's consumers is reduced or diminished.

(8) COVENANTS OF PURCHASER: The Purchaser covenants and agrees that it will not interconnect its facilities to any other source of water or permit its customers to interconnect a well, or wells, public or private, to be interconnected with the distribution system while connected to and using water from the Seller's system. All facilities constructed by the Purchaser which are connected to the Seller's water system shall be constructed in accordance with the rules and regulations of the Arkansas Department of Health, and that the Purchaser will operate its water system in accordance with the rules and regulations of the Arkansas Department of Health. Purchaser shall adopt and enforce the State Plumbing Code.

(9) SPECIAL COVENANT OF PURCHASER: The Purchaser understands and agrees that the maintenance of an approved water supply of the Seller is essential to the health and well-being of its entire community. If the Purchaser fails to carry out the rules and regulations of the Arkansas Department of Health and such failure would require the Arkansas Department of Health to withdraw its approval of the water supply of the Seller, the Seller shall have the right to terminate this Agreement, or at Seller's discretion, require the Purchaser to install reduced-pressure backflow assemblies at points of delivery.

(10) COMPLIANCE: Purchaser agrees to comply with all the rules and regulations of the Springdale Water Commission and all ordinances of the City of Springdale presently in effect and hereafter adopted.

(11) INDEMNITY AND HOLD HARMLESS PROVISION: Purchaser agrees to indemnify or otherwise hold harmless the Seller from any and all claims of every nature of any customer of the Purchaser. Purchaser further agrees to indemnify Seller for all costs of defending such claims including any judgment, interest, penalties, and attorney's fees.

(12) TERRITORY: It is specifically understood and agreed by and between the Seller and Purchaser hereunder that Purchaser shall not furnish water purchased under this Agreement to any area lying outside Seller's designated service territory, as established by a certain Memorandum of Understanding dated June 1, 1967, in which the Beaver Water District, and the cities of Springdale, Fayetteville, Bentonville, and Rogers (member cities) were signatory, without the written consent of the affected member city.

It is further understood and agreed by and between the Seller and Purchaser that Purchaser shall not furnish water purchased under this Agreement to any area outside the Tontitown Service Boundary as designated on the Service Boundary Map of the Tontitown Water System, attached hereto as Exhibit "A" and incorporated herein by this reference.

The parties hereby agree that Purchaser is allowed to provide temporary water service in areas so designated as Temporary Service Area on the Service Boundary Map of the Tontitown Water System, attached hereto as Exhibit "A" and incorporated herein by this reference. Water service provided by Purchaser in the designated Temporary Service Area is subject to the following conditions:

a.) All water service connections provided by Purchaser in said Temporary Service Area must be approved in advance by Seller.

b.) All water facilities and improvements constructed for large scale developments and subdivisions and, the plans and specifications thereof, must be approved in writing by Seller. All water improvements must be constructed in accordance with the current "Specification Requirements for the Construction of Water and Sewer Facilities" as adopted by the Springdale Water and Sewer Commission of the City of Springdale, Arkansas.

c.) The Purchaser must provide written notice to the customer for whom water service connection is being made of the following:

1. The customer is located in the water service territory of the Seller; and,
2. Water service by the Purchaser is temporary; and,
3. In the future, water service to the customer will be provided by the Seller.

d.) Any customers of the Purchaser located in the designated Temporary Service Area shall be transferred immediately to the Seller when the Seller extends its water lines into said area and has connected said lines to the customer's supply line. Seller shall give to Purchaser thirty (30) days advance notice of transfer.

(13) TERM: It is further mutually agreed between the Seller and the Purchaser that this contract shall become effective and enforceable the 7 day of July, 2004, for a period of five (5) years.

(14) RENEWAL: The Purchaser shall have the option to renew this contract upon terms and conditions as may be negotiated by the Seller and Purchaser by giving not less than six (6) months of written notice in advance of the termination date of this contract.

(15) NOTICES: It is understood and agreed that the Seller is acting through its Water Commission and that Purchaser is acting through its City Council. Any notice required by either

party under this contract shall be given by placing in the United States mail, a certified letter with return receipt requested with postage prepaid and addressed to the presiding officer of the party to be notified within the time required as set forth above. Nothing, herein, shall preclude giving actual written notice by placing such notice in the hands of the party to whom it is intended.

(16) WAIVER: Failure of either party hereto to exercise any options herein contained upon breach by the other shall not constitute a waiver of that party's right to exercise such options upon future breach.

(17) COMPLETE AGREEMENT: It is agreed that neither party hereto is relying upon any oral or written information or representations made by the other prior to the signing of this contract unless expressly provided herein, and that this contract constitutes the entire agreement between the parties and same shall not be hereafter amended or modified unless reduced to writing and signed by the parties hereto. It is further agreed that all earlier agreements of the parties are hereby rescinded

(18) SEVERABILITY: If any phrase, clause, sentence or paragraph of this contract shall be declared invalid by the judgment or decree of a court of competent jurisdiction, such invalidity shall not affect any of the remaining sentences, paragraphs or clauses of this contract.

IN WITNESS WHEREOF, the Seller and Purchaser have executed these presents by their respective authorized representatives, having been authorized to do so by appropriate resolution.

SPRINGDALE WATER COMMISSION

Gary C. George, Chairman

ATTEST:

Al Hanby, Secretary

CITY OF TONTITOWN, ARKANSAS

By Dan Watson, Mayor

ATTEST:

Frances Franco, Recorder/Treasurer

AMENDMENT TO
WATER PURCHASE CONTRACT

This amendment to a Water Purchase Contract is made this ____ day of _____, 2007, by and between the City of Springdale, Arkansas, a municipal corporation, acting by and through its Water and Sewer Commission, f/k/a Water Commission, hereinafter referred to as the "Seller", and the City of Tontitown, Arkansas, hereinafter referred to as the "Purchaser."

WITNESSETH:

WHEREAS, the parties to this amendment previously executed a Water Purchase Contract on the 22nd day of June, 2004, and now desire to amend the contract;

NOW, THEREFORE, in exchange for the mutual covenants herein contained, the parties agree:

A. Paragraph 1 shall be amended to read as follows:

(1) QUANTITY: The Seller agrees to furnish the Purchaser at points of delivery hereinafter specified, during the term of this contract or any renewal or extension thereof, potable water meeting applicable purity standards of the Arkansas Department of Health in such quantity as may be required by the Purchaser not to exceed 13.348 million gallons per month nor 458,000 gallons per day without the permission of the Seller.

B. Paragraph 10 shall be amended to read as follows:

(10) COMPLIANCE: Purchaser agrees to comply with all the rules and regulations of the Springdale Water and Sewer Commission and all ordinances of the City of Springdale, Arkansas, presently in effect and hereafter adopted. In the event Seller should experience a water shortage, Purchaser agrees to require water conservation of its users according to the voluntary and mandatory measures being imposed by the Seller upon its water users.

C. The parties hereto affirm each and every provision of the original agreement except as amended herein.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals the day and year first above written, having been authorized to do so by appropriate resolution.

WATER&SEWER COMMISSION
CITYOF SPRINGDALE, ARKANSAS

_____
Chris G. Weiser, Chairman

ATTEST:

_____
Paul E. Lawrence, Secretary

CITY OF TONTITOWN, ARKANSAS

_____
Joe Edgmon, Mayor

ATTEST:

_____
Tracy Goddard, Recorder/Treasurer

EXHIBIT B

Beaver Water District

2006 Annual Water Quality Report

Beaver Water District, P.O. Box 400, Lowell, Arkansas 72745-0400
(479) 756-3651, FAX (479) 751-4356

*Unregulated Constituents - Monitored by ADH and BWD **

Physical and Chemical Parameters	Units	BWD
Alkalinity (Phenolphthalein) *	ppm as CaCO3	ND (avg)
Alkalinity (Total) *	ppm as CaCO3	64 (avg)
Calcium	ppm as CaCO3	26.9
Conductivity *	µS/cm	199 (avg)
Hardness (Total) *	ppm as CaCO3	74 (avg)
Magnesium	ppm as Mg	1.96
Nickel	ppm	ND
Potassium	ppm	ND
Silica *	ppm as SiO2	2.1 (avg)
Sodium	ppm	7.77

PRIMARY STANDARDS - Health Related and Mandated by U.S. EPA & ADH

Disinfectant	Units	MCLG	MCL	BWD
Total Residual Chlorine*	ppm	4.0	4.0	1.36 (avg)
Range of Results	ppm			1.15 - 1.65
Clarity	**Units**	**MCLG**	**MCL**	**BWD**
Turbidity * (Treated Finished Water)			>0.3 NTU in	
Highest yearly sample result	NTU	n/a	>5% of	0.3
Average NTU	NTU		samples or any	0.08
Lowest % of samples meeting limit	%		1 sample>1	100
Microbiological	**Units**	**MCLG**	**MCL**	**BWD**
Total Coliform Bacteria	P/A	0	1/month	0
Fecal Coliform or *Escherichia coli*	P/A	0	0	0
Inorganic Chemicals	**Units**	**MCLG**	**MCL**	**BWD**
Antimony	ppb	6	6	ND
Arsenic	ppb	n/a	10	ND
Asbestos	MFL	7	7	Waiver
Barium	ppm	2	2	0.0228
Beryllium	ppb	4	4	ND
Cadmium	ppb	5	5	ND
Chromium	ppb	100	100	ND
Copper	ppm	1.3	AL=1.3	0.0055
Cyanide	ppb	200	200	ND
Fluoride – Average	ppm	4.0	4.0	0.84
Range of Results	ppm			0 - 1.02
Lead	ppb	0	AL=15	ND
Mercury	ppb	2	2	ND
Nitrate + Nitrite (as N)	ppm	10	10	0.26
Selenium	ppb	50	50	ND
Thallium	ppb	0.5	2	ND

Radionuclides	Units	MCLG	MCL	BWD
Alpha emitters	pCi/L	0	15	1.7 +1.0
Beta/photon emitters	pCi/L	0	50	ND

Synthetic Organic Contaminants (SOC's) - Regulated	Units	MCLG	MCL	BWD
2,4-D	ppb	70	70	ND
2,4,5-TP (Silvex)	ppb	50	50	ND
Alachlor	ppb	0	2	ND
Atrazine	ppb	3	3	ND
Benzo(a)pyrene (PAH)	ppt	0	200	ND
Carbofuran	ppb	40	40	ND
Chlordane	ppb	0	2	ND
Dalapon	ppb	200	200	ND
Di(2-ethylhexyl) adipate (Bis(2-ethylhexyl) adipate	ppb	400	400	ND
Di(2-ethylhexyl) phthalate (Bis (2-ethylhexyl) phthalate	ppb	0	6	ND
Dibromochloropropane (1,2-Dibromo-3-chloropropane, DBCP)	ppt	0	200	ND
Dinoseb	ppb	7	7	ND
Diquat	ppb	20	20	ND
Endothall	ppb	100	100	ND
Endrin	ppb	2	2	ND
Ethylene dibromide (1,2-Dibromoethane, EDB	ppt	0	50	ND
Glyphosate	ppb	700	700	ND
Heptachlor	ppt	0	400	ND
Heptachlor epoxide	ppt	0	200	ND
Hexachlorobenzene	ppb	0	1	ND
Hexachlorocyclopentadiene (HEX)	ppb	50	50	ND
Lindane	ppt	200	200	ND
Methoxychlor	ppb	40	40	ND
Oxamyl (Vydate)	ppb	200	200	ND
PCBs (Polychlorinated biphenyls)	ppt	0	500	ND
Pentachlorophenol (PCP)	ppb	0	1	ND
Picloram	ppb	500	500	ND
Simazine	ppb	4	4	ND
Toxaphene	ppb	0	3	ND

Definitions

Maximum Contaminant Level Goal or MCLG : The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level or MCL : The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology, BAT.

Treatment Technique or TT : A required process intended to reduce the level of a contaminant in drinking water.

Action Level or AL : The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

MFL = million fibers per liter
ND = Non-detected, constituent not present at detection limit
n/a = Not applicable
NS = Not sampled
NTU = Nephelometric Turbidity Units
P/A = Presence / Absence or Present / Absent
pCi/L = picocuries per liter (a measure of radioactivity)
ppm = parts per million, or milligrams per liter (mg/l)
ppb = parts per billion, or micrograms per liter (ug/l)
ppt = parts per trillion, or nanograms per liter (nanograms/l)
ppq = parts per quadrillion, picograms per liter (picograms/l)
RAA = Running Annual Average
uS/cm = microSiemens per centimeter
Waiver = an exemption to perform monitoring issued by the ADH based on system evaluation

Volatile Organic Contaminants (VOC's) - Regulated	Units	MCLG	MCL	BWD
Total Trihalomethanes (TTHMs) Running annual average of quarterly samples Range of quarterly samples	ppb	N/A	80	 56 27.9 - 85.3
Haloacetic Acids 5 (HAA5) Running annual average of quarterly samples Range of quarterly samples	ppb	N/A	60	 33 20.5 - 47.2
Benzene	ppb	0	5	ND
Carbon Tetrachloride	ppb	0	5	ND
Chlorobenzene	ppb	100	100	ND
o-Dichlorobenzene (1,2-Dichlorobenzene)	ppb	600	600	ND
p-Dichlorobenzene (1,4-Dichlorobenzene)	ppb	75	75	ND
1,2-Dichloroethane	ppb	0	5	ND
1,1-Dichloroethene (1,1-Dichloroethylene)	ppb	7	7	ND
cis-1,2-Dichloroethene (cis-1,2-Dichloroethylene)	ppb	70	70	ND
trans-1,2-Dichloroethene (...-Dichloroethylene)	ppb	100	100	ND
Dichloromethane (Methylene Chloride)	ppb	0	5	ND
1,2-Dichloropropane	ppb	0	5	ND
Ethylbenzene	ppb	700	700	ND
Styrene	ppb	100	100	ND
Tetrachloroethene (Tetrachloroethylene)	ppb	0	5	ND
Toluene	ppm	1	1	ND
1,2,4-Trichlorobenzene	ppb	70	70	ND
1,1,1-Trichloroethane	ppb	200	200	ND
1,1,2-Trichloroethane	ppb	3	5	ND
Trichloroethene (Trichloroethylene)	ppb	0	5	ND
Vinyl Chloride	ppb	0	2	ND
Xylenes, Total	ppm	10	10	ND

SECONDARY STANDARDS - *Aesthetic Standards Recommended by EPA & ADH*

Physical Parameters	Units	MCLG	BWD
Apparent Color	units	15	8
pH *	units	6.5 - 8.5	8.3 (avg)
Inorganic Chemicals	**Units**	**MCLG**	**BWD**
Aluminum	ppm	0.05 - 0.2	0.0613
Chloride	ppm	250	7.7
Corrosivity * (average) Langelier Saturation Index	SI	Non-corrosive	-0.13 Near neutral
Iron	ppm	0.3	ND
Manganese	ppm	0.05	ND
Silver	ppm	0.1	ND
Sulfate	ppm	250	19.5
Total Dissolved Solids	ppm	500	126
Zinc	ppm	5	ND

Unregulated Volatile Organic Chemicals - *Monitored by ADH*

Parameter	Units	BWD
Bromobenzene	ppb	ND
Bromochloromethane (Chlorobromomethane)	ppb	ND
Bromodichloromethane	ppb	4.84
Bromoform	ppb	ND
Bromomethane	ppb	ND
n-Butylbenzene	ppb	ND
sec-Butylbenzene	ppb	ND
tert-Butylbenzene	ppb	ND
Chloroethane (Ethyl Chloride)	ppb	ND
Chloroform	ppb	11.7
Chloromethane	ppb	ND
2-Chlorotoluene	ppb	ND
4-Chlorotoluene	ppb	ND
Dibromochloromethane	ppb	1.07
1,2-Dibromo-3-chloropropane (DBCP)	ppb	ND
1,2-Dibromoethane	ppb	ND
Dibromomethane (Methylene Bromide)	ppb	ND
1,3-Dichlorobenzene	ppb	ND
Dichlorodifluoromethane	ppb	ND
1,1-Dichloroethane	ppb	ND
1,3-Dichloropropane	ppb	ND
2,2-Dichloropropane	ppb	ND
1,1-Dichloropropene	ppb	ND
cis-1,3-Dichloropropene	ppb	ND
trans-1,3-Dichloropropene	ppb	ND
Di-n-butyl phthalate	ppb	ND
Hexachlorobutadiene	ppb	ND
Isopropylbenzene	ppb	ND
p-Isopropyltoluene	ppb	ND
Methyl tertiary butyl ether (Methyl-t-butyl ether, MTBE)	ppb	ND
Naphthalene	ppb	ND
n-Propylbenzene	ppb	ND
1,1,1,2-Tetrachloroethane	ppb	ND
1,1,2,2-Tetrachloroethane	ppb	ND
1,2,3-Trichlorobenzene	ppb	ND
Trichlorofluoromethane	ppb	ND
1,2,3-Trichloropropane	ppb	ND
1,2,4-Trimethylbenzene	ppb	ND
1,3,5-Trimethylbenze	ppb	ND

Disinfection By-Product Precursors - *Monitored by ADH*

Parameter	Units	BWD
Total Organic Carbons (TOC)	Lowest % TOC Removal Required % TOC Removal	27 0

There were no EPA Safe Drinking Water Act (SDWA) monitoring or compliance violations in 2006 for Beaver Water District. No Crytposporidium were detected in either the raw source water or treated finished water based on sampling and analyses during 2006.

* Analyzed and reported by Beaver Water District. All other analyses in this report by ADH.

2007 Annual Drinking Water Quality Report
Benton - Washington Regional Public Water Authority

We're pleased to present to you this year's Annual Drinking Water Quality Report. This report is designed to inform you about the quality water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, can pick up substances resulting from the presence of animals or from human activity. Our source is surface water from Beaver Lake.

Contaminants that may be present in source water include: Microbial contaminants such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; Inorganic contaminants such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; Pesticides and herbicides which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; Organic chemical contaminants including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; Radioactive contaminants which can be naturally occurring or be the result of oil and gas production and mining activities.

The Arkansas Department of Health has completed a Source Water Vulnerability Assessment for Benton - Washington Regional Public Water Authority. The assessment summarizes the potential for contamination of our source of drinking water and can be used as a basis for developing a source water protection plan. Based on the various criteria of the assessment, our water source has been determined to have a low susceptibility to contamination. You may request a summary of the Source Water Vulnerability Assessment from our office.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

In order to assure tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Benton - Washington Regional Public Water Authority is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

If you have any questions about this report or concerning your water utility, please contact Scott Borman, General Manager, at 479-451-9516. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled meetings. They are held on the fourth Thursday of each month at 9:30 AM at the Water Treatment Plant located at 15531 Woods Lodge Road in Rogers.

Benton - Washington Regional Public Water Authority routinely monitors for constituents in your drinking water according to Federal and State laws. The test results table shows the results of our monitoring for the period of January 1st to December 31st, 2007. In the table you might find terms and abbreviations you are not familiar with. To help you better understand these terms we've provided the following definitions:

Action Level - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Maximum Contaminant Level (MCL) - the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
Maximum Contaminant Level Goal (MCLG) – unenforceable public health goal; the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Maximum Residual Disinfectant Level (MRDL) - the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG) - the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
NA – not applicable
Nephelometric Turbidity Unit (NTU) – a unit of measurement for the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
Parts per million (ppm) – a unit of measurement for detected levels of contaminants in drinking water. One part per million corresponds to one minute in two years or a single penny in $10,000.
Parts per billion (ppb) – a unit of measurement for detected levels of contaminants in drinking water. One part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

TEST RESULTS

MICROBIOLOGICAL CONTAMINANTS

Contaminant	Violation Y/N	Level Detected	Unit	MCLG (Public Health Goal)	MCL (Allowable Level)	Major Sources in Drinking Water
Total Coliform Bacteria	N	1 positive sample in September, 2007	Present	0	1 positive sample per month	Naturally present in the environment
Turbidity	Y	Highest yearly sample result: **2.94** Lowest monthly % of samples meeting the turbidity limit: **86%**	NTU	NA	**> 0.3 NTU in ≤ 5% of samples and no single sample > 1 NTU**	Soil runoff

- Turbidity is a measurement of the cloudiness of water. We monitor it because it is a good indicator of the effectiveness of our filtration system.
- Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
- Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

INORGANIC CONTAMINANTS

Contaminant	Violation Y/N	Level Detected	Unit	MCLG (Public Health Goal)	MCL (Allowable Level)	Major Sources in Drinking Water
Fluoride	N	Average: 0.83 Range: 0.56 - 0.96	ppm	4	4	Erosion of natural deposits; water additive which promotes strong teeth
Nitrate [as Nitrogen]	N	Average: 0.78 Range: 0.73 - 0.82	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

DISINFECTION BY-PRODUCT PRECURSORS

- The percentage of Total Organic Carbon (TOC) removal was routinely monitored in 2007, and all TOC removal requirements set by USEPA were met. Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection by-products. These by-products include trihalomethanes (THMs) and haloacetic acids (HAAs).

REGULATED DISINFECTANTS

Disinfectant	Violation Y/N	Level Detected	Unit	MRDLG (Public Health Goal)	MRDL (Allowable Level)	Major Sources in Drinking Water
Chlorine	N	Average: 0.96 Range: 0.08 - 1.90	ppm	4	4	Water additive used to control microbes

BY-PRODUCTS OF DRINKING WATER DISINFECTION

Contaminant	Violation Y/N	Level Detected	Unit	MCLG (Public Health Goal)	MCL (Allowable Level)
HAA5 [Haloacetic Acids]	N	Highest Running 12 Month Average: 46 Range: 17.8 - **66.4**	ppb	0	**60**
TTHM [Total Trihalomethanes]	N	Highest Running 12 Month Average: 56 Range: 25.3 - **117.9**	ppb	NA	**80**

- Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
- Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

UNREGULATED CONTAMINANTS

Contaminant	Level Detected	Unit	MCLG (Public Health Goal)	Major Sources in Drinking Water
Chloroform	6.25	ppb	NA	By-products of drinking water disinfection
Bromodichloromethane	2.19	ppb	0	

- Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. MCLs (Maximum Contaminant Levels) and MCLGs (Maximum Contaminant Level Goals) have not been established for all unregulated contaminants.

VIOLATIONS

TYPE:	FROM:	TO:	CORRECTIVE ACTION:
Turbidity exceeded 0.3 NTU in more than 5% of the monthly readings Turbidity exceeded 1 NTU	2/1/2007	3/1/2007	Assessed filtration operations and are working on a solution to lower turbidity levels

EXHIBIT C

January 9, 2007

Chairman Mick Wagner and
Members of the Tontitown Water and Sewer Commission
PO Box 127
Tontitown, AR 72770

RE: Engineering Study
Elevated vs. Pumped Storage
USI Project No. 0609007.00

Dear Chairman Wagner and Commissioners,

At your request we have conducted an engineering study to evaluate the difference between two options for adding 500,000 gallons of water storage capacity to the City of Tontitown's water distribution system:

1) Elevated Water Storage Tank
2) Ground Water Storage Tank with a Booster Pump Station

The City's current master water plan recommends the construction of a 500,000 gallon elevated water storage tank on a site in the northwest part of town off of Liberty Avenue. Based on a ground elevation of approximately 1,280 feet MSL at the proposed tank site and a hydraulic grade of approximately 1,480 feet in the area, the expected height of the proposed water tank is approximately 200 feet. Although a shorter tank would be more economical, the hydraulic gradient of approximately 1,480 feet required that the tank be 200 feet tall to allow the tank to fill and draw. The most recent estimated project cost for the elevated tank presented to the Water & Sewer Commission was $1.4 million. Due to the high estimated costs, USI was tasked to evaluate the possibility of constructing pumped storage in lieu of an elevated tank.

Pumped storage is essentially a ground storage tank with a booster pump station to increase the pressure on the tank outlet. Three tank heights were considered: 40-ft., 48-ft., and 56-ft. A 40-ft. tank height was determined to be the most economical and was utilized in cost estimates presented in this letter. Sizing of the proposed booster pump station is as follows:

- Two (2) 25-HP 350 GPM (0.5 MGD) at 160-ft. Total Dynamic Head Pumps with Variable Frequency Starter
- One (1) 60-HP 1,000 GPM at 160-ft. Total Dynamic Head Fire Pump with Solid State Soft Starter

Cost estimates for the booster pump station are based on a pre-manufacturer, skid-mounted booster pump station that includes a building, suction/discharge piping, isolation valves,

magnetic flow meter, surge anticipator valve, electrical components/wiring, telemetry, and a standby power generator with an automatic transfer switch.

A comparison of the total capital costs to construct the two options (elevated storage vs. pumped storage) is presented in the following tables.

500,000 Gallon Elevated Storage Tank – Estimated Project Costs

200-ft. Tall Elevated Tank	$ 1,050,000
Total Construction Cost	**$ 1,050,000**
Engineering & Contingencies	$ 350,000
Total Project Costs	**$ 1,400,000***

* Does not include approx. $400,000 for water line to connect to existing system.

500,000 Gallon Ground Storage Tank with Pump Station – Estimated Project Costs

40-ft. Tall Ground Tank	$ 550,000
Booster Pump Station	$ 300,000
Total Construction Cost	**$ 850,000**
Engineering & Contingencies	$ 290,000
Total Project Costs	**$ 1,140,000***

* Does not include approx. $400,000 for water line to connect to existing system.

As shown above, the total capital cost to construct the elevated storage tank is approximately $260,000 more than the ground tank and pump station. Although the capital cost of the ground tank and pump station are less than the elevated tank, maintenance and operation costs for the pump station must be considered. Operation and maintenance costs for the booster pump station were estimated to be approximately $20,400 per year based on the following assumptions:

- Power Costs - $10,400 per year
  - $0.08 per KW/hr
  - Total Annual Power Consumption – Approx. 130,000 KW/hr
- Maintenance Costs - $10,000 per year
  - Periodic inspections, parts replacement, repairs, generator fuel, etc.

The present worth value of the expected $20,400 per year O&M costs over the next twenty years is approximately $255,000 assuming an annual interest rate of 5%. Adding the present worth of the O&M costs to the capital costs for the ground tank and pump station results in a total of $1,395,000 which is only $5,000 less than the estimated cost for the elevated storage tank.

Based on the above cost analysis, USI would recommend that the elevated tank be constructed in lieu of the booster pump station. Although the elevated tank would cost more initially, O&M costs to operate the pump station level the total facilities costs to nearly

equal. Given that the economic figures are relatively equal, the elevated tank would be the most reasonable selection because the City would not have to rely on a pump station to provide the required pressure.

Although an elevated tank is recommended over pumped storage, it was determined over the course of conducting this study that the City should consider postponing constructing the proposed tank. The City's primary meter from SWU was recently upgraded from a 4-inch (1,000 gpm capacity) to an 8-inch (3,500 gpm capacity). With the recent meter upgrade, available flows and fire flows are not limited by supply; however, available flows are limited in areas by the current distribution system. The primary benefits of a water storage tank are that it provides redundancy to the City's main water supply and adds extra water volume during extreme demands such as fire flows. Hydraulic modeling indicates that the proposed tank would not significantly improve available fire flow with the recent meter upgrade in place. With that being said, the only immediate benefit of the tank would be a redundancy in the system. Therefore, it is USI's recommendation that the City lowers the priority of adding storage to the system and concentrates available funding on improvements to the distribution system itself.

Also, it is recommended that the City consider an alternate location for the proposed tank when demands warrant that the tank be reconsidered for construction. The high point in the City is south of Henri De Tonti Boulevard between Klenc Road and Barrington Road. Constructing an elevated tank in this area would lower the overall tank height by approximately 20 feet. There are other benefits to having the tank in this area as compared to the original site. The alternate site is more centrally located to the existing City and to the areas where the most growth is expected. Also, the alternate site would provide more pressure to the City's current low pressure areas.

Following is an updated and prioritized list of the recommended improvements to the City's water system improvements:

Priority No. 1 - $600,000 Estimated Total Project Cost
Construct an 8-inch waterline from Highway 112 to Piazza Street parallel to the proposed Collector Street in the southeast part of town and upgrade south meter connection to SWU.

Priority No. 2 - $630,000 Estimated Total Project Cost
Construct an 8-inch waterline along Klenc Road from Henri De Tonti Boulevard (Hwy 412) to Kelly Street.

Priority No. 3 - $600,000 Estimated Total Project Cost
Construct an 8-inch water line from West Fletcher to S. Barrington Road.

Priority No. 4 - $800,000 Estimated Total Project Cost
Construct an 8-inch waterline from S. Pianalto at Wildcat Creek Road along Wildcat Creek Road then to Henri De Tonti Boulevard (Hwy. 412).

Priority No. 5 - $1,800,000 Estimated Total Project Costs
Construct an elevated 500,000 gallon water storage tank and connecting water line. Current estimate based on Liberty Avenue site and an 8-inch water line tying the tank to an existing water line on Henri De Tonti Boulevard (Hwy. 412).

The total estimated project costs for all recommended improvements is $4,400,000.

We want to thank the Tontitown Water & Sewer Commission for the opportunity to provide this service, and we look forward to working with you in the future. Please do not hesitate to contact us at any time if you have any questions or need any additional information.

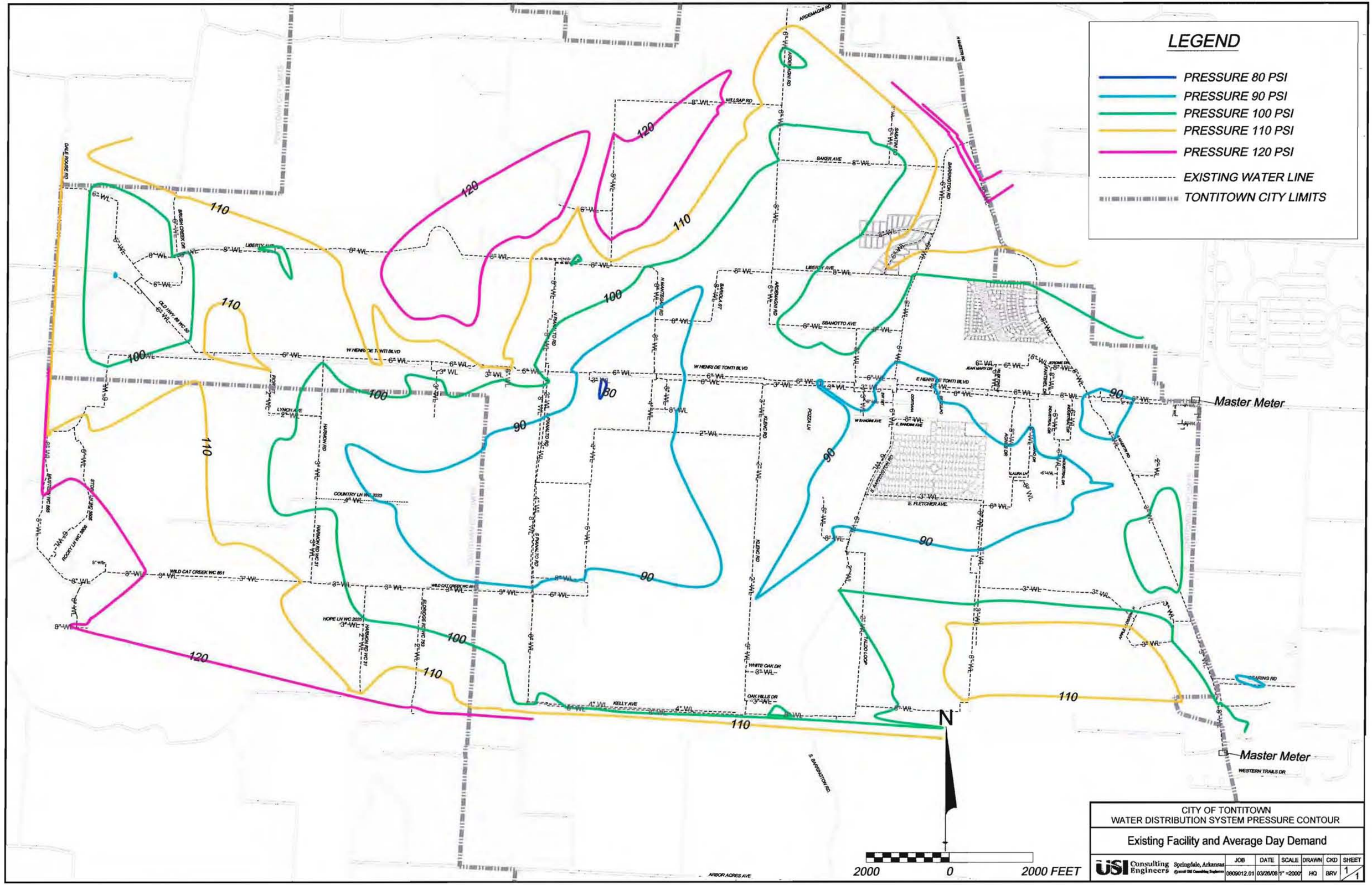
Sincerely,
USI Consulting Engineers, Inc.

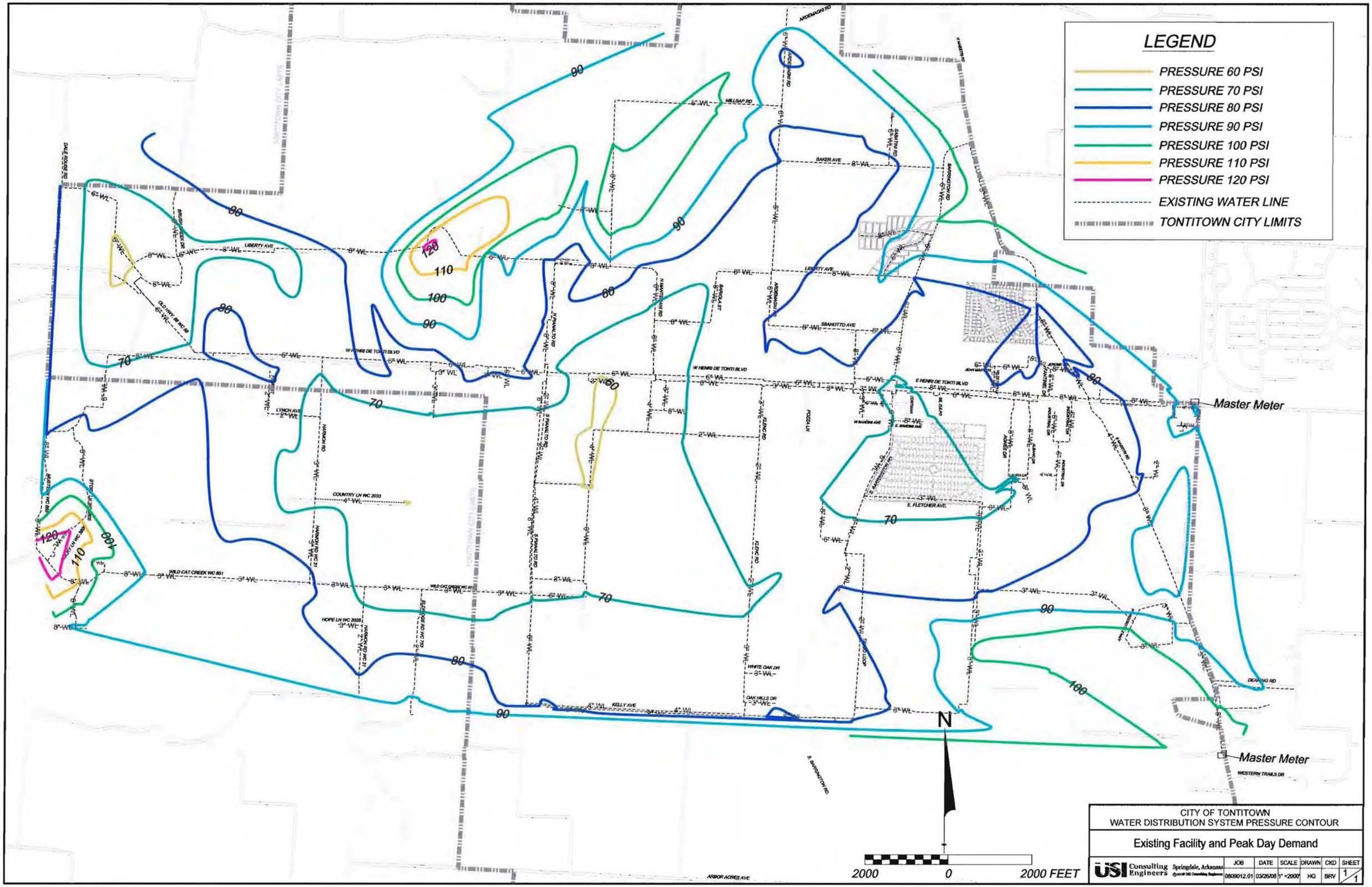
Charles R. Nickle, P.E.
President

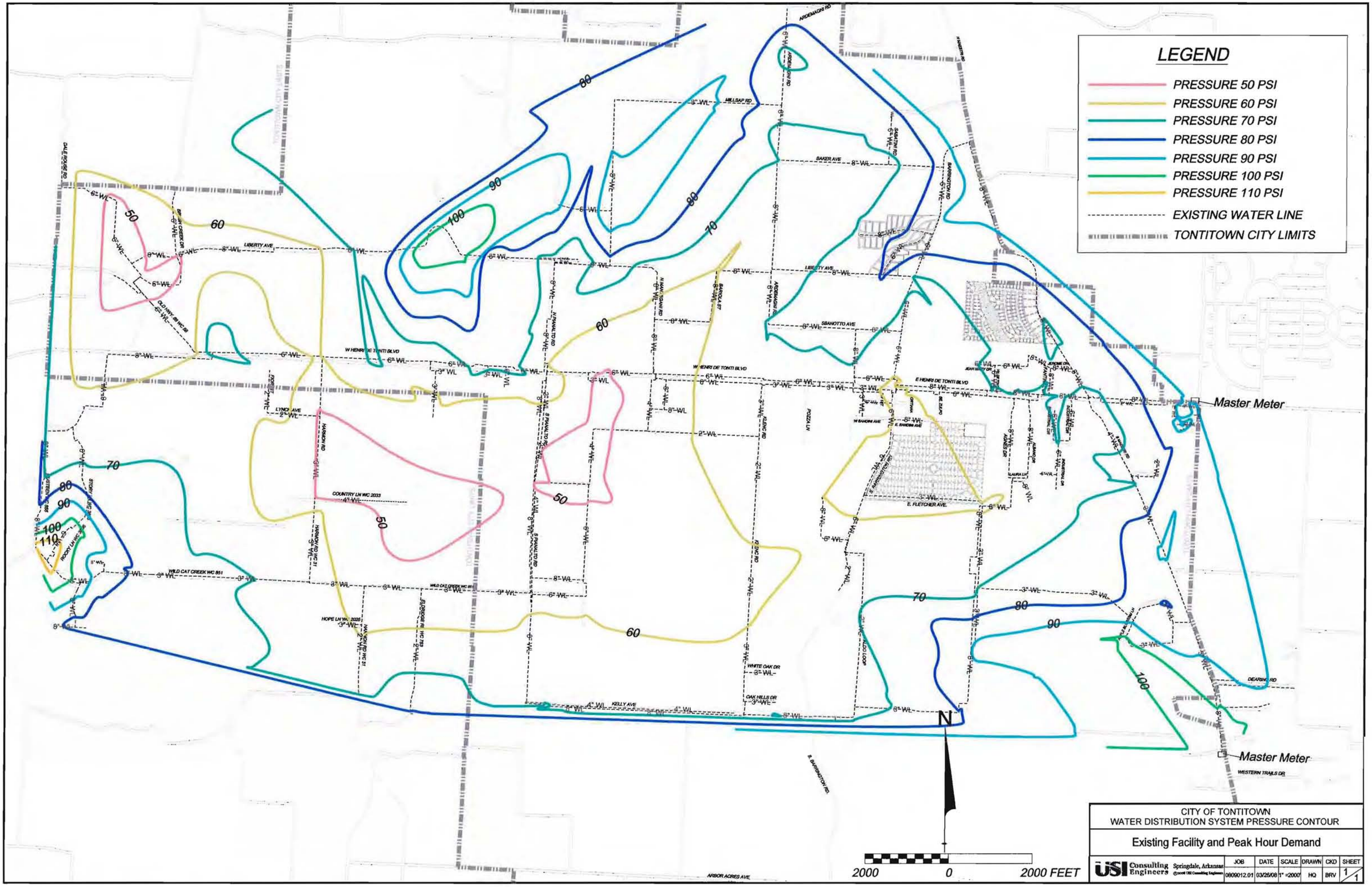
Wade W. Phillips, P.E.
Project Manager

CRN/WWP:wp

EXHIBIT D


LEGEND
PRESSURE 80 PSI
PRESSURE 90 PSI
PRESSURE 100 PSI
PRESSURE 110 PSI
PRESSURE 120 PSI
EXISTING WATER LINE
TONTITOWN CITY LIMITS
120
110
100
90
80
Master Meter
Master Meter
N
2000
0
2000 FEET
CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR
Existing Facility and Average Day Demand
USI Consulting Engineers
Springdale, Arkansas
JOB 0809012.01
DATE 03/26/08
SCALE 1" =2000'
DRAWN HQ
CKD BRV
SHEET 1/1


LEGEND
PRESSURE 60 PSI
PRESSURE 70 PSI
PRESSURE 80 PSI
PRESSURE 90 PSI
PRESSURE 100 PSI
PRESSURE 110 PSI
PRESSURE 120 PSI
EXISTING WATER LINE
TONTITOWN CITY LIMITS
Master Meter
Master Meter
N
2000
0
2000 FEET
CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR
Existing Facility and Peak Day Demand
USI Consulting Engineers
Springdale, Arkansas
JOB 0809012.01
DATE 03/26/08
SCALE 1" =2000'
DRAWN HQ
CKD BRV
SHEET 1/1


LEGEND
PRESSURE 50 PSI
PRESSURE 60 PSI
PRESSURE 70 PSI
PRESSURE 80 PSI
PRESSURE 90 PSI
PRESSURE 100 PSI
PRESSURE 110 PSI
EXISTING WATER LINE
TONTITOWN CITY LIMITS
Master Meter
Master Meter
N
2000 0 2000 FEET
CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR
Existing Facility and Peak Hour Demand
USI Consulting Engineers
Springdale, Arkansas
JOB 0809012.01
DATE 03/26/08
SCALE 1" =2000'
DRAWN HQ
CKD BRV
SHEET 1/1

LEGEND

- PRESSURE 80 PSI
- PRESSURE 90 PSI
- PRESSURE 100 PSI
- PRESSURE 110 PSI
- PRESSURE 120 PSI
- EXISTING WATER LINE
- TONTITOWN CITY LIMITS

Proposed 8" Water Line

Proposed 12" Water Line, Remove Existing 8" Water Line

Master Meter

Proposed 8" Water Line, Remove Existing 6" Water Line

Master Meter

Proposed 8" Water Line

2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR

Proposed 5 Year Facility and Average Day Demand

USI Consulting Engineers — Springdale, Arkansas

JOB	DATE	SCALE	DRAWN	CKD	SHEET
0809012.01	03/26/09	1" =2000'	HQ	BRV	1/1

LEGEND

- PRESSURE 80 PSI
- PRESSURE 90 PSI
- PRESSURE 100 PSI
- PRESSURE 110 PSI
- PRESSURE 120 PSI
- EXISTING WATER LINE
- TONTITOWN CITY LIMITS

Proposed 8" Water Line

Proposed 12" Water Line, Remove Existing 8" Water Line

Master Meter

Proposed 8" Water Line, Remove Existing 6" Water Line

Master Meter

Proposed 8" Water Line

2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR

Proposed 5 Year Facility and Peak Day Demand

USI Consulting Engineers — Springdale, Arkansas

JOB	DATE	SCALE	DRAWN	CKD	SHEET
0809012.01	03/26/08	1" =2000'	HQ	BRV	1/1

LEGEND

- PRESSURE 70 PSI
- PRESSURE 80 PSI
- PRESSURE 90 PSI
- PRESSURE 100 PSI
- PRESSURE 110 PSI
- PRESSURE 120 PSI
- EXISTING WATER LINE
- TONTITOWN CITY LIMITS

Proposed 8" Water Line

Proposed 12" Water Line, Remove Existing 8" Water Line

Master Meter

Proposed 8" Water Line, Remove Existing 6" Water Line

Master Meter

Proposed 8" Water Line

N

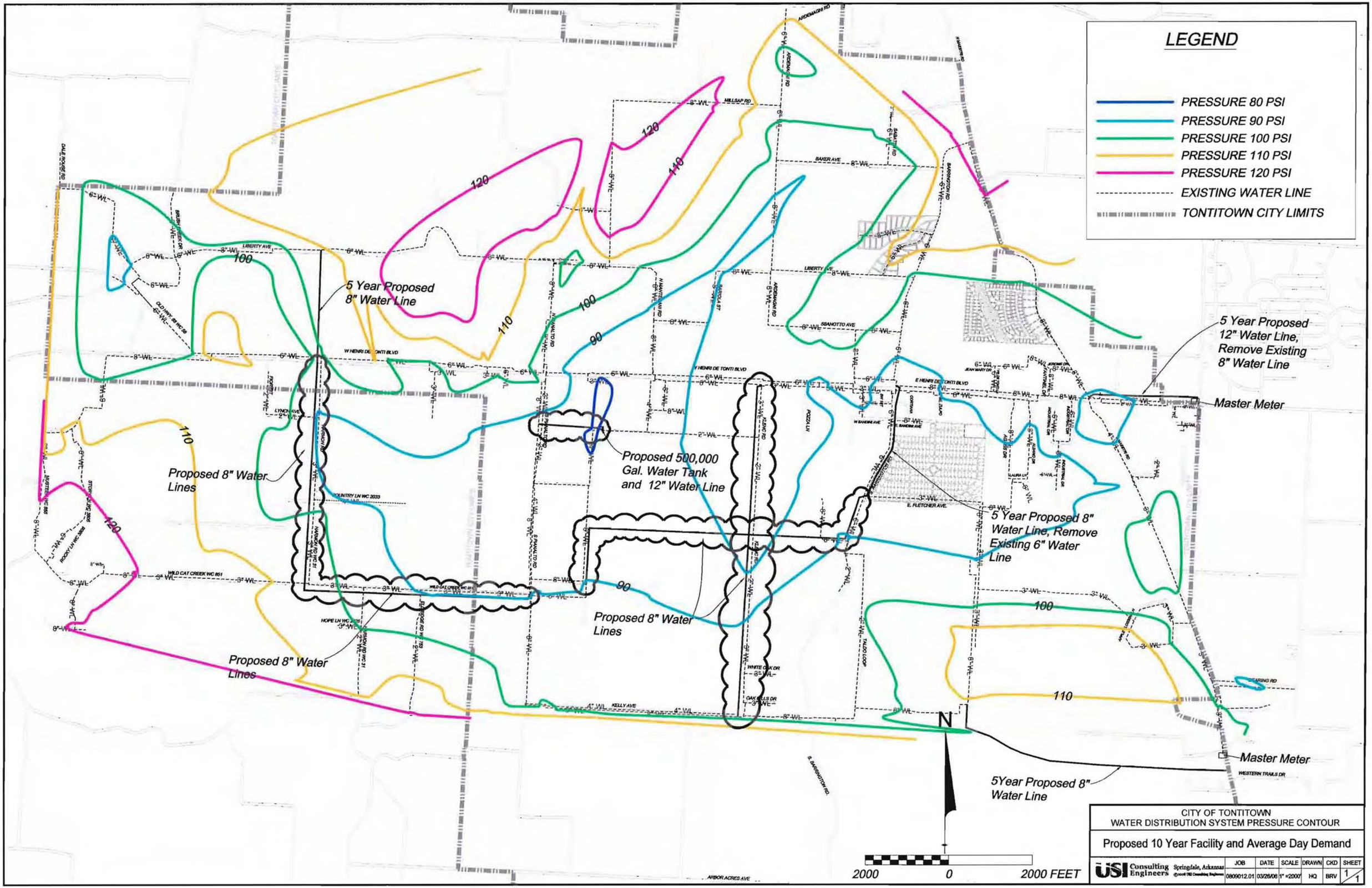
2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR

Proposed 5 Year Facility and Peak Hour Demand

USI Consulting Engineers Springdale, Arkansas

JOB	DATE	SCALE	DRAWN	CKD	SHEET
0809012.01	03/26/08	1" =2000'	HQ	BRV	1/1


LEGEND
PRESSURE 80 PSI
PRESSURE 90 PSI
PRESSURE 100 PSI
PRESSURE 110 PSI
PRESSURE 120 PSI
EXISTING WATER LINE
TONTITOWN CITY LIMITS
5 Year Proposed 8" Water Line
Proposed 8" Water Lines
Proposed 500,000 Gal. Water Tank and 12" Water Line
Proposed 8" Water Lines
Proposed 8" Water Lines
5 Year Proposed 12" Water Line, Remove Existing 8" Water Line
Master Meter
5 Year Proposed 8" Water Line, Remove Existing 6" Water Line
Master Meter
5Year Proposed 8" Water Line
N
2000 0 2000 FEET
CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR
Proposed 10 Year Facility and Average Day Demand
USI Consulting Engineers Springdale, Arkansas
JOB 0809012.01
DATE 03/26/08
SCALE 1" =2000'
DRAWN HQ
CKD BRV
SHEET 1/1

LEGEND

- PRESSURE 80 PSI
- PRESSURE 90 PSI
- PRESSURE 100 PSI
- PRESSURE 110 PSI
- PRESSURE 120 PSI
- EXISTING WATER LINE
- TONTITOWN CITY LIMITS

5 Year Proposed 8" Water Line

Proposed 8" Water Lines

Proposed 500,000 Gal. Water Tank and 12" Water Line

Proposed 8" Water Lines

Proposed 8" Water Lines

5 Year Proposed 12" Water Line, Remove Existing 8" Water Line

Master Meter

5 Year Proposed 8" Water Line, Remove Existing 6" Water Line

Master Meter

5Year Proposed 8" Water Line

2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR

Proposed 10 Year Facility and Peak Day Demand

USI Consulting Engineers, Springdale, Arkansas

JOB	DATE	SCALE	DRAWN	CKD	SHEET
0809012.01	03/26/08	1" =2000'	HQ	BRV	1/1

LEGEND

- PRESSURE 80 PSI
- PRESSURE 90 PSI
- PRESSURE 100 PSI
- PRESSURE 110 PSI
- PRESSURE 120 PSI
- EXISTING WATER LINE
- TONTITOWN CITY LIMITS

5 Year Proposed 8" Water Line

Proposed 8" Water Lines

Proposed 500,000 Gal. Water Tank and 12" Water Line

Proposed 8" Water Lines

Proposed 8" Water Lines

5 Year Proposed 12" Water Line, Remove Existing 8" Water Line

Master Meter

5 Year Proposed 8" Water Line, Remove Existing 6" Water Line

Master Meter

5Year Proposed 8" Water Line

N

2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR

Proposed 10 Year Facility and Peak Hour Demand

USI Consulting Engineers Springdale, Arkansas

JOB	DATE	SCALE	DRAWN	CKD	SHEET
0809012.01	03/26/08	1" =2000'	HQ	BRV	1/1

LEGEND

- PRESSURE 80 PSI
- PRESSURE 90 PSI
- PRESSURE 100 PSI
- PRESSURE 110 PSI
- PRESSURE 120 PSI
- EXISTING WATER LINE
- TONTITOWN CITY LIMITS

Proposed 8" Water Line

Proposed 12" Water Line, Parallel to Existing Water Line

5 Year Proposed 8" Water Line

5 Year Proposed 12" Water Line, Remove Existing 8" Water Line

Master Meter

10 Year Proposed 8" Water Lines

10 Year Proposed 500,000 Gal. Water Tank and 12" Water Line

10 Year Proposed 8" Water Lines

10 Year Proposed 8" Water Lines

5 Year Proposed 8" Water Line, Remove Existing 6" Water Line

Master Meter

5Year Proposed 8" Water Line

N

2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR

Proposed 20 Year Facility and Average Day Demand

USI Consulting Engineers Springdale, Arkansas

JOB	DATE	SCALE	DRAWN	CKD	SHEET
0809012.01	03/26/08	1" =2000'	HQ	BRV	1/1

LEGEND

- PRESSURE 80 PSI
- PRESSURE 90 PSI
- PRESSURE 100 PSI
- PRESSURE 110 PSI
- PRESSURE 120 PSI
- EXISTING WATER LINE
- TONTITOWN CITY LIMITS

Proposed 8" Water Line

Proposed 12" Water Line, Parallel to Existing Water Line

5 Year Proposed 8" Water Line

5 Year Proposed 12" Water Line, Remove Existing 8" Water Line

Master Meter

10 Year Proposed 8" Water Lines

10 Year Proposed 500,000 Gal. Water Tank and 12" Water Line

10 Year Proposed 8" Water Lines

10 Year Proposed 8" Water Lines

5 Year Proposed 8" Water Line, Remove Existing 6" Water Line

Master Meter

5Year Proposed 8" Water Line

N

2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR
Proposed 20 Year Facility and Peak Day Demand

USI Consulting Engineers	Springdale, Arkansas	JOB	DATE	SCALE	DRAWN	CKD	SHEET
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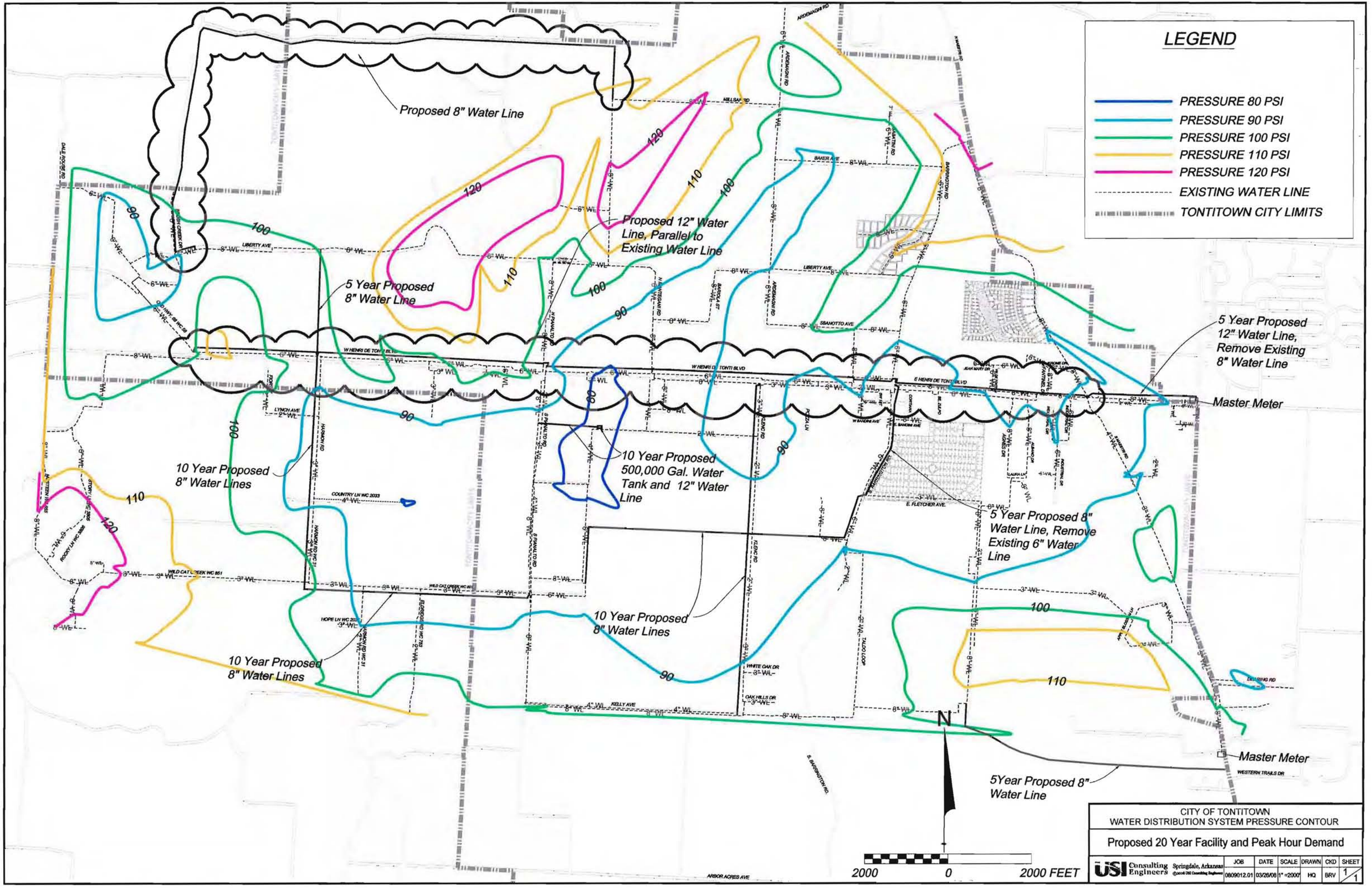
LEGEND
PRESSURE 80 PSI
PRESSURE 90 PSI
PRESSURE 100 PSI
PRESSURE 110 PSI
PRESSURE 120 PSI
EXISTING WATER LINE
TONTITOWN CITY LIMITS
Proposed 8" Water Line
Proposed 12" Water Line, Parallel to Existing Water Line
5 Year Proposed 8" Water Line
5 Year Proposed 12" Water Line, Remove Existing 8" Water Line
Master Meter
10 Year Proposed 8" Water Lines
10 Year Proposed 500,000 Gal. Water Tank and 12" Water Line
10 Year Proposed 8" Water Lines
10 Year Proposed 8" Water Lines
5 Year Proposed 8" Water Line, Remove Existing 6" Water Line
5Year Proposed 8" Water Line
Master Meter
N
2000 0 2000 FEET
CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM PRESSURE CONTOUR
Proposed 20 Year Facility and Peak Hour Demand
USI Consulting Engineers Springdale, Arkansas
JOB 0809012.01
DATE 03/26/08
SCALE 1" =2000'
DRAWN HQ
CKD BRV
SHEET 1/1

LEGEND

- AVAILABLE FIRE FLOW BELOW 500 GPM
- AVAILABLE FIRE FLOW 500 TO 999 GPM
- AVAILABLE FIRE FLOW 1000 TO 1499 GPM
- AVAILABLE FIRE FLOW 1500 TO 2499 GPM
- AVAILABLE FIRE FLOW ABOVE 2500 GPM
- EXISTING WATER LINE
- TONTITOWN CITY LIMITS

Master Meter

Master Meter

N

2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM AVAILABLE FIRE FLOW

Existing Facility and Peak Day Demand

USI Consulting Engineers — Springdale, Arkansas

JOB	DATE	SCALE	DRAWN	CKD	SHEET
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LEGEND

- AVAILABLE FIRE FLOW BELOW 500 GPM
- AVAILABLE FIRE FLOW 500 TO 999 GPM
- AVAILABLE FIRE FLOW 1000 TO 1499 GPM
- AVAILABLE FIRE FLOW 1500 TO 2499 GPM
- AVAILABLE FIRE FLOW ABOVE 2500 GPM
- EXISTING WATER LINE
- TONTITOWN CITY LIMITS

Proposed 8" Water Line

Proposed 12" Water Line, Remove Existing 8" Water Line

Master Meter

Proposed 8" Water Line, Remove Existing 6" Water Line

Master Meter

Proposed 8" Water Line

N

2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM AVAILABLE FIREF LOW

Proposed 5 Year Facility and Peak Day Demand

USI Consulting Engineers Springdale, Arkansas

JOB	DATE	SCALE	DRAWN	CKD	SHEET
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LEGEND

- AVAILABLE FIRE FLOW BELOW 500 GPM
- AVAILABLE FIRE FLOW 500 TO 999 GPM
- AVAILABLE FIRE FLOW 1000 TO 1499 GPM
- AVAILABLE FIRE FLOW 1500 TO 2499 GPM
- AVAILABLE FIRE FLOW ABOVE 2500 GPM
- EXISTING WATER LINE
- TONTITOWN CITY LIMITS

5 Year Proposed 8" Water Line

Proposed 8" Water Lines

Proposed 500,000 Gal. Water Tank and 12" Water Line

Proposed 8" Water Lines

Proposed 8" Water Lines

5 Year Proposed 12" Water Line, Remove Existing 8" Water Line

Master Meter

5 Year Proposed 8" Water Line, Remove Existing 6" Water Line

Master Meter

5Year Proposed 8" Water Line

N

2000 0 2000 FEET

CITY OF TONTITOWN
WATER DISTRIBUTION SYSTEM AVAILABLE FIRE FLOW

Proposed 10 Year Facility and Peak Day Demand

USI Consulting Engineers Springdale, Arkansas

JOB	DATE	SCALE	DRAWN	CKD	SHEET
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USI Consulting Engineers

Springdale, Arkansas