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PROJECT PLAN REPORT

FOR

CITY OF ROCK FALLS WHITESIDE COUNTY, ILLINOIS

WATER SYSTEM IMPROVEMENTS

June 2019



WILLETT HOFMANN
& ASSOCIATES INC

ENGINEERING ARCHITECTURE LAND SURVEYING

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WHA # 1487D18

June 24, 2019

Ted Padilla, Water Superintendent
City of Rock Falls
603 W. 10th Street
Rock Falls, Illinois 61071

Re: Water System Improvements
IEPA Project Plan Report
WHA No. 1487D18

Dear Mr. Padilla:

We have completed the Project Plan report for making improvements to the water system. We respectfully submit the report herewith for your consideration, information and use.

This Project Plan report outlines the need for the replacement or looping of approximately 30,775 feet of water main in the water distribution system due to age and sizing issues. The water main replacement and looping locations are detailed in the Project Plan report.

The Project Plan Report details the design criteria, evaluates the existing water system, evaluates alternative designs, investigates environmental impacts and develops a financing plan in which an IEPA Public Water Supplies Revolving Fund Loan is recommended. Finally, the user charge rate structure and budget are discussed, and an implementation schedule is recommended.

To move the project along, it is important that the Project Plan report be promptly submitted to the Illinois Environmental Protection Agency for review and approval and that all pertinent environmental and historical preservations sign-off letters are obtained. After the IEPA has given preliminary approval of the plan, a public hearing maybe required to discuss the Project Plan, thereby providing the public an opportunity to express their views in this regard.

We appreciate the opportunity to be of service and will be pleased to meet with you at your convenience to discuss this plan in detail.

Respectfully submitted,

WILLETT, HOFMANN & ASSOCIATES, INC.

BY _____
Daniel B. Loos, P.E.

DBL:rv

cc: William Wescott, Mayor w/ encl.
Robbin Blackert, City Administrator w/ encl.
Michelle Conklin, Deputy City Clerk w/ encl.
File

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SECTION I – EXECUTIVE SUMMARY

A. EXISTING WATER SYSTEM

The City of Rock Falls operates a waterworks system that includes three (3) wells, two (2) elevated water storage tanks, three (3) – 1,000 GPM booster pumps, one (1) – 1350 GPM fire pump and a water distribution system that consists primarily of 4", 6", 8", 10" and 12" diameter watermain. The current water treatment plant includes two (2) 750 GPM filters and one (1) 1,000 GPM filter. The City's water source comes from a shallow sand and gravel aquifer. All wells are located at the water treatment plant within approximately 300 feet of one another. Well No. 2 is rated for 1,280 GPM and Well No. 5 and No. 7 are rated for 1,000 GPM. Wells No. 2, No. 5, and No. 7 were constructed in 1960, 1990, and 2016 respectively.

The City has 4,155 water system customers. The City's average daily pumping in 2018 was 0.624 MGD. The peak daily pumpage in 2018 was 0.857 MGD. The water supply shall have a design capacity exceeding the maximum daily demand with the largest producing well out of service. With the largest well out of service (Well No. 2), the capacity of the system is 2,000 GPM or 2.88 MGD, which is 336.1% of the City's peak daily demand in 2018.

B. WATER SYSTEM DEFICIENCIES

1. Water Supply and Water Treatment

All of the wells and the water treatment plant facility are in good operating condition. There are no deficiencies with the water supply and water treatment facilities.

2. Water Storage

The water storage facilities are in good operating condition. The elevated water storage tank at the water treatment plant was painted and rehabilitated in 2011. The Industrial Park elevated water storage tank was last painted and rehabilitated in 2005 and the City is looking to paint and perform any necessary rehabilitation within the next couple of years.

3. Water Distribution System

The City has invested significantly in their water treatment and water storage facilities over last 20 years, but needs to put a greater emphasis on the water distribution system. According to the Illinois State Water Survey, the City's water system was originally constructed in 1885, so the water distribution system has water mains that are most likely over 100 years old. Water was supplied by the City of Sterling wells and the system was owned and operated by the Northern Illinois Water Service Company (circa 1935-1946) and then Northern Illinois Water Corporation, until around 1960 when the City of Rock Falls began operating their own system.

The IEPA Water System Inspection Report dated May 20, 2016 noted how some water mains are undersized and may not provide the required minimum system pressure. The Report recommended replacement of undersized mains and noted 4" diameter is the minimum main size and the minimum size for fire flow is 6" diameter. The Report also noted the unaccounted water for the system exceeds 15%, which is quite high. The City has responded to the IEPA's

recommendation by replacing the customer water meters, but replacing some of these aging water mains will also help in reducing water loss in the system. The IEPA Water System Inspection Report is included as Exhibit A.

The City records their water distribution breaks and has determined certain areas of the distribution system have a higher concentration of breaks. Also, several lines providing service to multiple users are undersized mains and should be replaced with a minimum 6" diameter main in order to provide adequate residual pressures during hydrant flushing and provide fire flow protection. Water distribution improvements need to be made to start replacing or rehabilitating the old water mains in the distribution system that have had a chronic history of water main breaks and some of their critical transmission mains that reinforce the small water mains in the system.

C. RECOMMENDED WATER SYSTEM IMPROVEMENTS

1. Water Supply and Water Treatment

No improvements are recommended to the water supply and water treatment facilities.

2. Water Storage

No improvements are recommended to the water storage facilities.

3. Water Distribution System

The highest priority water main replacement or rehabilitation projects in the water distribution system are as follows.

- Project #1 – Replace the existing 2", 4", and 6" diameter water mains on 3rd Avenue from 1st Avenue (IL Route 40) to W. 2nd Street and extend the watermain from 3rd Avenue on W. 6th Street to 4th Avenue and on W. 3rd Street to 2nd Avenue, all with 6" diameter water main.
- Project #2 – Replace the existing 1" diameter water main on 2nd Avenue between W. 5th Street and 1st Avenue (IL Route 40) with a 6" diameter water main.
- Project #3 – Replace the existing 2" diameter water main on Hudson Drive from 5th Avenue to the east end of Hudson Avenue and extend south to W. 10th Street, creating a loop, all with 6" diameter water main.
- Project #4 – Replace the existing 4" diameter water main on W. 13th Street from 5th Avenue to 1st Avenue with a 6" diameter watermain.
- Project #5 – Replace the existing 6" diameter water main on 6th Avenue from W. 14th Street to W. 13th Street with a 6" diameter watermain.
- Project #6 – Replace the existing 1" diameter water main on 7th Avenue from W. 12th Street to W. 10th Street with a 6" diameter water main. Replace the existing 8" diameter water main on 8th Avenue from north of U.S. Route 30 to W. 10th Street with an 8" diameter water main. Replace the existing 6" and 8" diameter water mains on W. 10th Street from 8th Avenue to 5th Avenue.

- Project #7 – Replace the existing 6" diameter water main on Flock Avenue from Roberts Street to U.S. Route 30 with a 6" diameter watermain.
- Project #8 – Replace the existing 6" diameter water main on W. 14th Street from 13th Avenue to 12th Avenue with a 6" diameter watermain.
- Project #9 – Replace the existing 6" diameter water main from the intersection of W. 18th Street and 13th Avenue east to 12th Avenue, then north to W. 17th Street, and back west to 13th Avenue, all with a 6" diameter water main.
- Project #10 – W. 20th Street Replace the existing 6" diameter water main on W. 20th Street from 13th Avenue to 11th Avenue with a 6" diameter watermain.
- Project #11 – Replace the existing 6" diameter water main on Bennett Drive from 14th Avenue (Buell Road) to the west, to the end of Bennett Drive, then north to U.S. Route 30, and extend a new 8" diameter watermain to the east, connecting to an existing 8" diameter water main.
- Project #12 – Replace the existing 6" and 2" diameter water mains on 10th Avenue from W. 7th Street to south of W. 10th Street with a 6" diameter water main.
- Project #13 – Replace the existing 4" diameter water main on 7th Avenue from W. 6th Street to south of W. 7th Street with a 6" diameter water main.
- Project #14 – Replace the existing 4" diameter water main on W. 8th Street from 6th Avenue to 5th Avenue with a 6" diameter water main.
- Project #15 – Directionally bore a 6" diameter water main from the existing 6" diameter dead end water main on the east end of Stanley Court to the existing 6" diameter water main at the southeast corner of Garden Circle, creating a loop.
- Project #16 – Replace the existing 2" diameter water main on E. 13th Street, east of Mary Avenue, extend the water main northeasterly through Centennial Park to Avenue C, and replace the existing 4" diameter water main on Avenue C to E. 11th Street, all with 6" diameter water main, creating a loop and eliminating two dead ends.
- Project #17 – Replace the existing 1" diameter water main on Burlington Terrace south of E. 5th Street and the existing 4" diameter water main on E. 6th Street extending west from Avenue C and connect to the existing 6" diameter water main on E. 6th Street that extends east from Avenue A. This will create loops and eliminate three (3) dead ends.
- Project #18 – Replace the existing 1" diameter water mains on Smith Court and Goodell Court, south of E. 4th Street, with a 6" water main and connect the ends to create a loop.
- Project #19 – Replace the existing 2" and 4" diameter water mains on Avenue C from Dixon Avenue to E. 4th Street with a 6" diameter water main.
- Project #20 – Replace the existing 4" diameter water main on Avenue E from E. 6th Street to E. 7th Street with a 6" diameter water main.

- Project #21 – Replace the existing 4” diameter water main on Circle Drive from north of Dixon Avenue to the north end of Circle Drive and to Martin Road with a 6” diameter water main.
- Project #22 – Replace the existing 6” diameter water main on Wiker Drive from Franklin Drive to Dixon Avenue with a 12” diameter water main.
- Project #23 – Replace the existing 6” diameter water main on Marsha Lane from Dixon Avenue to Meadow Court with a 6” diameter water main.
- Project #24 – Extend an 8” diameter water main from the south end of Keith Drive to the south end of Wiker Drive to create a loop in the system, as well as connecting a 6” diameter water main from the new 8” water main to an existing 6” diameter water main on Marsha Lane.

D. WATER SYSTEM IMPROVEMENT PHASES AND PROJECT COST SUMMARY

The water system improvements will be constructed in five (5) phases. The project location and cost included in each Phase is summarized below.

Phase 1

Project #1

3rd Avenue Water Main Replacement – 1st Avenue to W. 2nd Street
 W. 6th Street Water Main Replacement/Looping – 4th Avenue to 3rd Avenue
 W. 3rd Street Water Main Replacement/Looping – 3rd Avenue to 2nd Avenue

Project #2 – 2nd Avenue Water Main Replacement/Looping – 1st Avenue to W. 5th Street

Project #3 – Hudson Drive Water Main Replacement/Looping – 5th Avenue to W. 10th Street

Project #4 – W. 13th Street Water Main Replacement/Looping – 5th Avenue to 1st Avenue

Project #5 – 6th Avenue Water Main Replacement – W. 14th Street to W. 13th Street

TABLE 1
 Phase 1 Project Cost Summary

Item	Project Costs
Construction	\$1,539,975
Contingency	\$ 153,025
Project Planning	\$ 19,000
Engineering Design/Geotechnical	\$ 154,000
Engineering Construction	\$ 127,000
IEPA Loan Application	\$ 10,000
Interest During Construction	\$ 29,000
Total Cost	\$2,032,000

Phase 2

Project #6

7th Avenue Water Main Replacement/Looping – W. 12th Street to W. 10th Street

8th Avenue Water Main Replacement – U.S. Route 30 to W. 10th Street

W. 10th Street Water Main Replacement – 8th Avenue to 5th Avenue

Project #7 – Flock Avenue Water Main Replacement – Roberts Street to U.S. Route 30

Project #8 – W. 14th Street Water Main Replacement – 13th Avenue to 12th Avenue

TABLE 2
 Phase 2 Project Cost Summary

Item	Project Costs
Construction	\$1,502,525
Contingency	\$ 150,475
Engineering Design/Geotechnical	\$ 154,000
Engineering Construction	\$ 139,000
IEPA Loan Application	\$ 7,000
Interest During Construction	\$ 29,000
Total Cost	\$1,982,000

Phase 3

Project #9 – W. 18th Street, 12th Avenue, and W. 17th Street Water Main Replacement – East of 13th Avenue

Project #10 – 13th Avenue, W. 20th Street, and 11th Avenue Water Main Replacement – North of W. 21st Street

Project #11 – Bennett Drive Water Main Replacement/Looping – 14th Avenue to U.S. Route 30

Project #12 – 10th Avenue Water Main Replacement – W. 10th Street to W. 7th Street

Project #13 – 7th Avenue Water Main Replacement – W. 6th Street to South of W. 7th Street

TABLE 3
 Phase 3 Project Cost Summary

Item	Project Costs
Construction	\$1,628,965
Contingency	\$ 162,035
Engineering Design/Geotechnical	\$ 175,500
Engineering Construction	\$ 153,500
IEPA Loan Application	\$ 7,000
Interest During Construction	\$ 32,000
Total Cost	\$2,159,000

Phase 4

Project #14 – W. 8th Street Water Main Replacement – 6th Avenue to 5th Avenue

Project #15 – Stanley Court to Garden Circle Water Main Extension/Looping

Project #16 – E. 13th Street & Avenue C Water Main Replacement/Looping – Mary Avenue to E. 11th Street

Project #17 – Burlington Terrace and E. 6th Street – E. 5th Street to Avenue C Water Main Replacement/Looping

Project #18 – Smith Court and Goodell Court Water Main Replacement/Looping

Project #19 – Avenue C Water Main Replacement – Dixon Avenue to E. 4th Street

Project #20 – Avenue E Water Main Replacement – E. 7th Street to E. 6th Street

TABLE 4
Phase 4 Project Cost Summary

Item	Project Costs
Construction	\$1,170,455
Contingency	\$ 116,545
Engineering Design/Geotechnical	\$ 132,500
Engineering Construction	\$ 105,500
IEPA Loan Application	\$ 7,000
Interest During Construction	\$ 23,000
Total Cost	\$1,555,000

Phase 5

Project #21 – Circle Drive to Martin Road Water Main Replacement – North of Dixon Avenue

Project #22 – Wiker Drive Water Main Replacement – Franklin Drive to Dixon Avenue

Project #23 – Marsha Lane Water Main Replacement – Meadow Court to Dixon Avenue

Project #24 – Keith Drive to Wiker Drive Water Main Looping

TABLE 5
 Phase 5 Project Cost Summary

Item	Project Costs
Construction	\$1,461,950
Contingency	\$ 146,050
Engineering Design/Geotechnical	\$ 158,000
Engineering Construction	\$ 139,000
IEPA Loan Application	\$ 7,000
Interest During Construction	\$ 29,000
Total Cost	\$1,941,000

E. WATER DEPARTMENT PROJECTED EXPENSES AND REVENUES

The water rates have a 4.5% annual increase built into the rate structure through 2022. The Water Department’s 5-year projected expenses and revenues are summarized in Table 6 below. The 5-year projections show that no rate increase is required at this time. The City will analyze expenses and revenues annually to determine if any rate adjustment will be required for any of the phases.

TABLE 6
 Water Department Projected Expenses and Revenues

	FY2019/20	FY2020/21	FY2021/22	FY2022/23	FY2023/24
Expenses					
Operation and Maintenance	\$1,223,309	\$1,259,147	\$1,296,194	\$1,334,494	\$1,374,095
Capital Improvements	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000
Debt Service	\$ 254,637	\$ 240,062	\$ 269,112	\$ 296,062	\$ 229,838
Total Expenses	\$1,677,946	\$1,699,210	\$1,765,306	\$1,830,556	\$1,803,933
Revenues					
Water Sales	\$1,648,500	\$1,725,000	\$1,803,000	\$1,803,000	\$1,803,000
Other	\$ 41,000	\$ 41,000	\$ 41,000	\$ 41,000	\$ 41,000
Total Revenue	\$1,689,500	\$1,766,000	\$1,844,000	\$1,844,000	\$1,844,000
Net Income/(Loss)	\$ 11,554	\$ 66,790	\$ 78,694	\$ 13,444	\$ 40,067

F. WATER RATES AND COST IMPACT TO USERS

The project financing is detailed in Section VI of the Project Plan report. The City’s water rate schedule of charges for next five (5) years with the 4.5% increase through 2022 is summarized in Tables 7 and 8 below.

TABLE 7
 Water Division Rate Schedule

Charge	FY2018/19	FY2019/20	FY2020/21
Basic User Charge (First 300 C.F./Mo.)	\$10.00/User/Mo.	\$10.80/User/Mo.	\$11.65/User/Mo.
Debt Service Charge	\$4.85/User/Mo.	\$4.85/User/Mo.	\$4.85/User/Mo.
Capital Improvement Charge	\$3.50/User/Mo.	\$3.50/User/Mo.	\$3.50/User/Mo.
Basic User Rate (Over 300 C.F.)	\$4.20/100 C.F.	\$4.40/100 C.F.	\$4.60/100 C.F.

TABLE 8
 Water Division Rate Schedule

Charge	FY2021/22	FY2022/23	FY2023/24
Basic User Charge (First 300 C.F./Mo.)	\$12.55/User/Mo.	\$12.55/User/Mo.	\$12.55/User/Mo.
Debt Service Charge	\$4.85/User/Mo.	\$4.85/User/Mo.	\$4.85/User/Mo.
Capital Improvement Charge	\$3.50/User/Mo.	\$3.50/User/Mo.	\$3.50/User/Mo.
Basic User Rate (Over 300 C.F.)	\$4.80/100 C.F.	\$4.80/100 C.F.	\$4.80/100 C.F.

The cost impact to an average residential user using 476.3 C.F. (3,563 gallons) of water per month for the next 5 fiscal years, based on the 4.5% water rate increase is summarized in Table 9 below.

TABLE 9
 Monthly Residential Water Bill Increase

	Monthly Bill		
	User Charge Increase	User Rate Increase	Total
FY2018/19	\$0.00	\$7.40	\$25.75
Phase 1 – FY2019/20	\$0.80	\$7.76	\$26.91
Phase 2 – FY2020/21	\$0.85	\$8.11	\$27.31
Phase 3 – FY2021/22	\$0.90	\$8.46	\$27.71
Phase 4 – FY2022/23	\$0.00	\$8.46	\$27.71
Phase 5 – FY2023/24	\$0.00	\$8.46	\$27.71

SECTION II – COMMUNITY/WATER SYSTEM

A. COMMUNITY INFORMATION

The City of Rock Falls is a rural community with a population of 9,266. It is located on the eastern edge of Whiteside County just south of the Rock River and across the river from the City of Sterling. The City is home to 19 parks (over 100 acres) used for recreation by residents and surrounding communities in addition to the recreation opportunities provided by the Rock River and Hennepin Canal.

The City is located on a very flat terrain that contains sandy soils and a very high groundwater table. The City government includes a Mayor, Clerk, Treasurer, City Administrator, and a City Council which has eight (8) aldermen. The City services and departments include police, fire, public works, water, sewer, electric, and fiber optic internet.

The City water department operates and maintains the water system which includes three (3) wells with a total capacity of 3,280 GPM or 4.72 MGD, two (2) elevated water storage tanks each with a capacity of 300,000 gallons, three (3) – 1,000 GPM booster pumps, one (1) – 1,350 GPM fire pump, and a water distribution system that consists primarily of 4", 6", 8", 10" and 12" diameter watermain. The current water treatment plant includes two (2) - 750 GPM filters and one (1) - 1,000 GPM filter. The City's water source comes from a shallow sand and gravel aquifer. All wells are located at the water treatment plant within approximately 300 feet of one another. Well #2 is rated for 1,280 GPM and Well #4 and #5 are rated for 1,000 GPM. Wells No. 2, No. 4, and No. 5 pump groundwater to an aerator for the oxidation of the iron and into a ground level detention tank; then, high service pumps pump the water from the detention tank through the filters to remove the iron; the filter effluent is chlorinated, fluorinated, and then discharged to the elevated storage tank and water distribution system.

The wastewater department operates and maintains the wastewater treatment plant and sanitary sewer collection system. The wastewater treatment plant is located in the northwest part of Rock Falls along the Rock River. The wastewater treatment plant includes fine screening, grit removal, extended aeration, final clarification, tertiary filters, UV disinfection, aerobic digestion, and sludge dewatering belt filter presses. The City operates a separated sanitary sewer system. The sanitary sewer collection system includes eleven (11) lift stations and various diameter sanitary sewers.

From the 2000 Census to the 2010 Census the City's population decreased by 314 people. The City anticipates a steady to slight increase in population in the next 20 year period. Considering the projected steady to slight increase in population, Rock Falls is making efforts to promote economic growth of the City.

The local newspaper for the City of Rock Falls is the Sterling Gazette, 3200 E. Lincolnway, Sterling, IL 61081.

B. WATER USAGE AND CUSTOMER BASE

The City's water customers are a mixture of residential, commercial, industrial and institutional users as detailed in Table 10 below.

TABLE 10
 Number of Customers and Billable Volume

Customer Class	# of Customers	Annual Billable Volume (Gallons)	
		FY 2017	FY 2018
Residential	3,779	162,639,222	160,523,731
Commercial	340	35,226,517	36,186,265
Industrial	20	1,297,122	1,143,023
Municipal	16	5,305,933	5,064,312
Totals	4,155	204,468,794	202,917,331

The daily average and daily peak well pumping for 2016 and 2017 have been summarized in Table 11 below.

TABLE 11
 Water System Pumping – 2017 and 2018

Month	2017		2018	
	Average (MGD)	Peak Daily (MGD)	Average (MGD)	Peak Daily (MGD)
January	0.719	0.945	0.648	0.857
February	0.705	0.807	0.609	0.735
March	0.703	0.773	0.613	0.785
April	0.716	0.942	0.606	0.716
May	0.744	0.899	0.676	0.785
June	0.792	0.858	0.682	0.805
July	0.766	0.977	0.651	0.829
August	0.700	0.720	0.601	0.723
September	0.669	0.737	0.588	0.743
October	0.647	0.725	0.586	0.718
November	0.653	0.837	0.605	0.644
December	0.607	0.702	0.571	0.678
Average/Peak	0.702	0.977	0.620	0.857

The water loss in the water system for 2017 and 2018 is summarized in Table 12 below.

TABLE 12
 Water System Water Loss

Year	Water Pumped (MG)	Billable Volume (MG)	Water Loss	
			MG	%
2017	256.230	204.469	51.761	20.2
2018	226.300	202.917	23.383	10.3

There is a significant amount of water loss in the water system. The City has a replacement program for water meters and continue to replace approximately 120 meters every year. The new water meters should reduce water loss from inaccurate metering and the new system will make it easier to read the meters and allow the City to obtain more frequent readings that may help the customers identify water loss in their home or business. The City may want to consider contracting a leak detection company to try to locate significant leaks in the water system and estimate the amount of water being used for water distribution system flushing and the amount used during the backwashing of the filters to further reduce water loss.

Well pumps No. 2, 5, and 7 alternate automatically as the lead pump. Wells No. 2, 5, and 7 have capacities of 1,280, 1,000, and 1,000 GPM respectively. The three wells are pumped first to the 2,500 GPM induced draft aerator and detention tank for oxidation of the iron and then pumped to filtration. With the largest well out of service (Well No. 2), the design capacity of the water supply is 2,880,000 GPD, which is sufficient to supply their peak daily demand in 2017 and 2018. The City has adequate capacity with the largest well out of service to handle normal peak daily demand.

C. WATER QUALITY

The water treatment plant provides adequate iron and arsenic removal to meet water quality standards. The finished water is meeting all USEPA primary and secondary drinking water standards. The water treatment plant facility was originally constructed in 1990 with an aeration tank and two (2) 750 GPM filters. In 2001, one of the 750 GPM filters was replaced and a 1,000 GPM filter was added at the facility. The aeration tank was rehabilitated in 2018 and the facility is in very good condition and operating properly. No improvements are recommended to the water treatment facility at this time.

D. CURRENT WATER SYSTEM CONDITIONS

1. Water Supply

The water system obtains its water from a shallow sand and gravel aquifer. Well No. 2 was constructed in 1960 along with a water treatment plant and an elevated storage tank. Well No. 5 was drilled in 1990 with a capacity of 1,000 GPM. Well No. 7 was drilled in 2016 with a capacity of 1,000 GPM. The existing well data is summarized in Table 13 below.

TABLE 13
 Existing Well Data

	Well No. 2	Well No. 5	Well No. 7
Construction Year	1960	1990	2016
Contractor	JP Miller Artisan Well Co.	Albrecht Well Drilling	Brotcke Well & Pump
Depth of Well	136'	130'	132'
Depth of Casing	110'	104'	112'
Well Capacity	1280 GPM	1000 GPM	1000 GPM

The peak daily pumpage for the water system is 0.977 MGD. The capacity of the water supply with the largest well out of service is 2.880 MGD, which is greater than the historical peak daily pumpage.

The City has performed standard well pump maintenance on their wells. The City’s schedule is to pull the well pumps every 8 – 10 years for maintenance.

2. Water Storage

The water system has two (2) – 300,000 gallon elevated water storage tanks that provide system pressure and water storage during peak hourly demands and fire protection. The first storage tank was constructed in 1960 and is located at the water treatment plant. In 1991, a second 300,000 gallon elevated storage tank was constructed in the Industrial Park. Both tanks are water spheroidal type tanks. The overflow elevation of both elevated water storage tanks is 802.0. The ground elevation in Rock Falls ranges from 640.0 – 649.0. The elevated water storage tanks provide a system pressure of 65 psi to 69 psi. The water storage facilities are summarized in Table 14 below.

TABLE 14
 Water Storage Facilities

Location	Type	Volume (Gallons)	Year Constructed	Year Painted
WTP	Aeration Tank	72,000	1960	N/A
WTP	Waterspheroid Elevated	300,000	1960	2011
Industrial Park	Waterspheroid Elevated	300,000	1991	2005
Total		672,000		

Both elevated water storage tanks are in good condition. The City has the water storage tanks repainted on a regular 15-20 year schedule to maintain a quality paint system that will protect the steel tank from rusting and deterioration. The City is planning on repainting the Industrial Park water tower in the next few years.

The existing water storage volume will provide adequate storage for equalization, fire protection and emergency reserve as detailed below.

a. Equalization Volume

The water supply is designed to meet the peak daily demand with the largest well out of service. During peak hourly demand periods, the water system demand will be greater than the water supply, so the water storage equalization volume will be utilized to provide the additional water volume required. Where constant speed water supply pumping is provided, the equalization storage requirement can range from 10 – 25% of the peak daily demand of the system. The equalization storage volume for the water system is calculated below.

Equalization Volume

Average Daily Demand (ADD): 702,000 GPD

Peak Daily Demand (PDD): 977,000 GPD

Equalization Storage: $0.17 \times \text{PDD} = 166,100$ gallons

b. Fire Protection Volume

The fire protection storage shall be sufficient to provide 3,500 gpm for a three (3) hour duration fire event. The total fire protection storage volume is 630,000 gallons as calculated below.

$$\text{Fire Protection Volume: } 3,500 \text{ gpm} \times 60 \text{ Min/Hr} \times 3 \text{ Hours} = 630,000 \text{ gallons}$$

c. Emergency Reserve Volume

The emergency reserve volume is based on an assessment of the vulnerability of the water system. Factors that determine how much emergency storage is required include whether or not emergency power is available at the water sources and water treatment facilities and if the water system can handle a major water distribution break. The City has a generator with automatic transfer switch at their well and water treatment plant sites. The City's well capacity is approximately three (3) times the peak daily demand of the system. Lastly, when power has been interrupted, the power outage is typically of a short duration. The water system appears to have a low risk assessment for water supply and water loss emergencies, therefore emergency reserve storage volume has been designed for 10% of the average daily demand as calculated below.

$$\text{Emergency Reserve Volume: } 702,000 \times 0.10 = 70,200 \text{ gallons}$$

d. Water Storage Volume

In the 2016 IEPA Evaluation Report of the City's water system, which is included as Attachment 'A', the IEPA noted that elevated storage capacity did not meet the average daily demand of the system, however standby power is available to run the system. The water system does provide fire protection for the City, so the system should be able to provide water to meet the fire demand and domestic water demand using the elevated water storage volume and pumping capacity of the water supply. The estimated equalization and fire protection volume is 796,100 gallons, and the water systems' capacity to meet the fire and domestic water demands is 870,000 gallons, as calculated below. The combined water supply and elevated water storage capacity is adequate to meet the fire and domestic water demands.

Water System Fire and Domestic Demand Capacity

$$\text{Elevated Storage Available} = 600,000 \times 0.85 = 510,000 \text{ Gallons}$$

$$\text{System Water Available} = 2,000 \text{ GPM} \times 60 \text{ min/hr} \times 3 \text{ hours} = 360,000 \text{ Gallons}$$

$$\text{Total Water Available} = 870,000 \text{ Gallons}$$

The recommended storage volume required is calculated in the Table 15 below.

TABLE 15
 Water Storage Volume

	Volume (Gallons)
Equalization	166,100
Fire Protection	630,000
Emergency Reserve	70,200
Total Water Storage Volume Required	866,300
Combined Existing Storage and Water Supply Volume	870,000
Storage Volume (Shortage)/Surplus	3,700

3. Water Distribution System

The water system dates back to 1885, and some of the water distribution system is over 100 years old. The water distribution system consists of 1", 2", 4", 6", 8", 10" and 12" diameter water mains. The water distribution system has fire hydrants used for fire protection and flushing maintenance of the water mains. The most recent IEPA inspection indicated there are some undersized water mains in the system. The City's water distribution map is included as Exhibit C-1.

The City's water distribution system consists primarily of cast iron and ductile iron water main. The City has had a significant number of breaks in several areas and is illustrated in Exhibit C-2 – Water Main Breaks Hot Spots Map. Most of these water mains are some of the oldest water mains in the water system.

4. Water Treatment

The original water treatment plant was constructed in 1960 along with Well No. 2 and an elevated storage tank. The water treatment plant is located directly south of Dillon School between 8th and 9th Avenue. In 1991, the water treatment plant was modified and updated by installing a 2,500 GPM forced draft aerator, a 30 minute ground level detention basin and three (3) – 1,000 GPM high lift turbine pumps. Also, the existing pressure filters were modified with air assisted backwash and hydraulic loading was increased to 3 GPM per S.F. of filter area for a design capacity of 1,500 GPM. In 1997, the water treatment plant was updated and expanded by replacing the two (2) – 750 GPM pressure filters and constructing a new 1,000 GPM pressure filter for a total treatment capacity of 2,500 GPM.

In 2017, a large portion of piping, valves, and fittings was replaced on the two 750 GPM filters, due to age.

The existing water treatment plant facility is good condition and is producing a high quality compliant drinking water.

5. Federal or State Violations

The City's water system does not have any violations and no future drinking water violations are anticipated.

SECTION III - RECOMMENDED WATER SYSTEM IMPROVEMENTS

A. SERVICE AREA AND PROJECT LOCATION

The recommended water system improvements will benefit all water users connected to the City's water distribution system. The City of Rock Falls has 4,155 water system customers. The location of the water system improvements are shown on the Project Location Map included as Exhibit D. The water system improvements will be located on various streets where water main replacements and rehabilitation will be performed.

B. GROWTH PROJECTION

1. Residential

Census data since 1970 is summarized in Table 17 below:

TABLE 17
Rock Falls Census Data

Year	Population	% Change
1970	10,287	
1980	10,633	+3.4%
1990	9,654	-9.2%
2000	9,580	-0.8%
2010	9,266	-3.3%

The City of Rock Falls' economic development outlook looks bright. With the prospects of new commercial and light industrial development, will bring new job and residential growth. Even though the population trend over the last 20 years has been in a decline, a 0.25% residential growth rate is projected over the next 20 years. The projected population in 2039 is 9,938 or a population increase of 672 from the 2010 census. The increased residential water demand will be 33,600 gpd (672 P.E. x 50 gpd/P.E).

The population growth over the next 20 years will be slow but steady given the optimistic economic activity in the region. Some of the population growth may come from providing water service to existing residential developments that are currently on private well and septic systems. Future residential growth areas are shown on the Growth Projection Map included as Exhibit E.

2. Commercial

The City's future commercial development is anticipated to be along IL Route 40 and US Route 30 which has access to the I-88 Tollway. Development is also anticipated to continue along the riverfront, as there has been much activity in this area the last 5 years.

The estimated water demand for a typical commercial building is approximately 0.1 GPD per square foot of building. A building will use an estimated 20 percent of the parcel, with the

remaining 80 percent consisting of green space, parking, and stormwater detention. It's estimated that 500,000 square feet of commercial buildings will be constructed or redeveloped over the 20 year design period. This would equate to the development of approximately 57 acres of property. The commercial development water demand is estimated to be 50,000 GPD (500,000 S.F. x 0.1 GPD/S.F.). The future commercial development areas are shown on the Growth Projection Map included as Exhibit E.

3. Light Industrial

The City's future light industrial development is anticipated to be on US Route 30 west of Prophetstown Road and east of IL Route 40. The estimated water demand for a typical light industrial building is approximately 0.05 GPD per square foot of building. The building will use an estimated 20 percent of the parcel, with the remaining 80 percent consisting of green space, parking, and stormwater detention. It's estimated that 1,000,000 square feet of light industrial buildings will be constructed or redeveloped over the 20 year design period. This would equate to the development of approximately 115 acres of property. The light industrial development water demand is estimated to be 50,000 GPD (1,000,000 S.F. x 0.05 GPD/S.F.). The future industrial development areas are shown on the Growth Projection Map included as Exhibit E.

4. Existing and Future Demands

TABLE 18
 Projected Water Demands in 2039

	Daily Average Flow (GPD)
Existing Water Demand (2018)	620,000
Future Demands	
Residential	33,600
Commercial	50,000
Industrial	50,000
Water Loss (5% of Future Demands)	6,680
Total Project Water Demands in 2039	760,280
Peak Daily Flow in 2039 (PFF=1.5)	1,140,420

The projected daily average flow in 2039 is estimated at 760,280 GPD. The projected peak daily flow in 2039 is estimated to be 1,140,420 GPD using a peak daily factor of 1.5, which accounts for seasonal high water demand during the year. The City's total well capacity is 4.723 MGD. The well capacity with the largest well out of service is 2.88 MGD. The City's well capacity is adequate to meet the projected peak daily demand of 1,140,420 GPD in 2039.

C. WATER SYSTEM IMPROVEMENTS

1. Water Supply

The City of Rock Falls has three (3) water supply wells and the water supply capacity is adequate to meet the peak daily water demand with the largest well out of service as detailed in Section II D. 1. All of the wells and well pumps are in good condition. No improvements are recommended to the water supply.

2. Elevated Water Storage Tank

The City has 600,000 gallons of water storage, and the combined water storage and water supply is adequately sized to provide equalization volume during peak hourly usage, fire protection and an emergency reserve for a small unexpected water loss event based on our calculations in Section II D. 2. All of the water storage facilities are in very good condition. No improvements are recommended to water storage capacity.

3. Water Distribution System

a. General

The City's water distribution system is comprised mostly of cast iron and ductile iron water main. External pipe corrosion on the oldest water mains in the distribution system is the primary cause for the water main breaks. The City needs to start investing in their water distribution system and start replacing some of their older water distribution mains that have a higher frequency for breaks. The replacement/rehabilitation of the water mains will reduce water loss in the system and reduce the occurrence of boil orders. Water loss reduction will reduce the total pumping required, which will reduce energy and chemical costs. The amount of energy and chemical cost reductions cannot be calculated at this time because the amount of water loss eliminated by the water main replacement/rehabilitation is not known.

The City will obtain IEPA PWS construction permits during the design phase for each project detailed below.

The recommended water distribution improvements and cost estimates are detailed below. The cost estimates provided for the water main improvements take into account the material costs associated with compliance with the AIS requirements as required in the IEPA PWSRFL program.

b. Project #1

- 3rd Avenue Water Main Replacement – 1st Avenue to W. 2nd Street
- W. 6th Street Water Main Replacement/Looping – 4th Avenue to 3rd Avenue
- W. 3rd Street Water Main Replacement/Looping – 3rd Avenue to 2nd Avenue

Description:

The existing water mains on 3rd Avenue from 1st Avenue (IL Route 40) to W. 2nd Street are aging and some are undersized with sizes of 2", 4", and 6" diameter. The existing water main on W. 6th Street is 1" diameter, serves two (2) residences, and dead ends. The existing water main on W. 3rd Street is 6" diameter, serves two (2) residences, and dead ends.

It is recommended that a 6" diameter water main be constructed on 3rd Avenue from 1st Avenue (IL Route 40) to 2nd Street. The 6" diameter water main will connect to existing 6" diameter water mains on 1st Avenue and W. 2nd Street. The portion of watermain under the State Route will be bored and will have a steel casing pipe, in accordance with IDOT requirements.

The 6" diameter water main will also extend west from 3rd Avenue on W. 6th Street, connecting to an 8" diameter water main on 4th Avenue. The 6" diameter water main will also extend from 3rd Avenue on W. 3rd Street, connecting to a 6" diameter water main on 2nd Avenue. The 3rd Avenue Water Main Replacement project is shown on Exhibit F-1.

Cost Estimate:

The probable cost estimate for the 3rd Avenue, W. 6th Street, and W. 3rd Street Water Main Replacement/Looping project is \$1,043,000 as detailed in Table 19 below.

TABLE 19
 3rd Avenue – 1st Avenue to W. 2nd Street
 W. 6th Street – 3rd Avenue to 4th Avenue
 W. 3rd Street – 3rd Avenue to 2nd Avenue
 Water Main Replacement/Looping
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Steel Casing Pipe, 20" Dia., Bored	44	L.F.	\$500	\$ 22,000
Watermain Quality Casing Pipe, 12" Dia.	850	L.F.	\$80	\$ 68,000
Water Main, 6" Dia.	2,900	L.F.	\$65	\$ 188,500
Water Service Casing Pipe, 1-1/2" Dia.	740	L.F.	\$30	\$ 22,200
Water Service, 2" Dia.	90	L.F.	\$50	\$ 4,500
Water Service, 1" Dia.	2,600	L.F.	\$40	\$ 104,000
Machine Tapping Sleeve, 8"x6" w/ Gate Valve, 6" Dia.	2	Each	\$8,000	\$ 16,000
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	2	Each	\$7,500	\$ 15,000
Gate Valve, 6" Dia.	10	Each	\$2,000	\$ 20,000
Corp Stop and Curb Stop & Box, 2" Dia.	1	Each	\$1,200	\$ 1,200
Corp Stop and Curb Stop & Box, 1" Dia.	60	Each	\$900	\$ 54,000
Fire Hydrant Complete	4	Each	\$5,500	\$ 22,000
Tracer Wire Access Box (Heavy Traffic)	4	Each	\$500	\$ 2,000
Tracer Wire Access Box (Light Traffic)	64	Each	\$250	\$ 16,000
Ductile Iron Fittings	1,200	LBS	\$13	\$ 15,600
Granular Select Backfill	2,700	C.Y.	\$30	\$ 81,000
Temporary Surface Over Trench	830	C.Y.	\$30	\$ 24,900
Class B Patch - Method II	12	S.Y.	\$225	\$ 2,700
Bituminous Pavement Replacement	1,820	S.Y.	\$35	\$ 63,700
Sidewalk Replacement	2,000	S.F.	\$12	\$ 24,000
Curb and Gutter Replacement	500	L.F.	\$40	\$ 20,000
Class 1 Seeding and Pulverized Topsoil, 4"	1450	L.F.	\$10	\$ 14,500
Abandon Existing Water Mains	1	L.S.	\$10,000	\$ 10,000
Traffic Control	1	L.S.	\$15,000	\$ 15,000
Construction				\$ 826,800
Contingency				\$ 82,200
Design Engineering				\$ 68,000
Geotechnical				\$ 6,000
Construction Engineering				\$ 60,000
Total Project Cost				\$1,043,000

c. Project #2 – 2nd Avenue Water Main Replacement/Looping – 1st Avenue to W. 5th Street

Description:

The existing water main on 2nd Avenue from 1st Avenue (IL Route 40) to W. 5th Street is undersized at 1" diameter, serves three (3) residences, and is a dead end.

It is recommended that a 6" diameter water main be constructed on 2nd Avenue from 1st Avenue (IL Route 40) to W. 5th Street. The 6" diameter water main will connect to an existing 6" diameter water main on 1st Avenue and an existing 8" diameter water main on W. 5th Street.

The portion of watermain under the State Route will be bored and will have a steel casing pipe, in accordance with IDOT requirements. The 2nd Avenue Water Main Replacement/Looping project is shown on Exhibit F-2.

Cost Estimate:

The probable cost estimate for the 2nd Avenue Water Main Replacement/Looping project is \$148,000 as detailed in Table 20 below.

TABLE 20
2nd Avenue – 1st Avenue to W. 5th Street
Water Main Replacement/Looping
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Steel Casing Pipe, 20" Dia., Bored	44	L.F.	\$500	\$ 22,000
Watermain Quality Casing Pipe, 12" Dia.	140	L.F.	\$80	\$ 11,200
Water Main, 6" Dia.	310	L.F.	\$65	\$ 20,150
Water Service, 1" Dia.	80	L.F.	\$40	\$ 3,200
Machine Tapping Sleeve, 12"x8" w/ Gate Valve, 6" Dia.	1	Each	\$8,000	\$ 8,000
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	1	Each	\$7,500	\$ 7,500
Corp Stop and Curb Stop & Box, 1" Dia.	4	Each	\$900	\$ 3,600
Tracer Wire Access Box (Heavy Traffic)	2	Each	\$500	\$ 1,000
Tracer Wire Access Box (Light Traffic)	4	Each	\$250	\$ 1,000
Ductile Iron Fittings	325	LBS	\$13	\$ 4,225
Granular Select Backfill	70	C.Y.	\$30	\$ 2,100
Temporary Surface Over Trench	30	C.Y.	\$30	\$ 900
Class B Patch - Method II	12	S.Y.	\$225	\$ 2,700
Bituminous Pavement Replacement	40	S.Y.	\$50	\$ 2,000
Concrete Driveway Replacement	40	S.Y.	\$80	\$ 3,200
Bituminous Driveway Replacement	30	S.Y.	\$50	\$ 1,500
Sidewalk Replacement	100	S.F.	\$12	\$ 1,200
Curb and Gutter Replacement	25	L.F.	\$60	\$ 1,500
Class 1 Seeding and Pulverized Topsoil, 4"	170	L.F.	\$10	\$ 1,700
Abandon Existing Water Mains	1	L.S.	\$1,000	\$ 1,000
Traffic Control	1	L.S.	\$15,000	\$ 15,000
Construction				\$114,675
Contingency				\$ 11,325
Design Engineering				\$ 10,000
Geotechnical				\$ 2,000
Construction Engineering				\$ 10,000
Total Project Cost				\$148,000

d. Project #3 – Hudson Drive Water Main Replacement/Looping – 5th Avenue to W. 10th Street

Description:

The existing water main on Hudson Drive east of 5th Avenue is undersized at 2" diameter, serves seven (7) residences, and dead ends.

It is recommended that a 6" diameter water main be constructed on Hudson Drive from 5th Avenue to the east end of Hudson Avenue and extend south to W. 10th Street. This will eliminate the undersized water main and the dead end, creating a loop. The Hudson Drive Water Main Replacement/Looping project is shown on Exhibit F-3.

Cost Estimate:

The probable cost estimate for the Hudson Drive Water Main Replacement/Looping project is \$195,000 as detailed in Table 21 below.

TABLE 21
Hudson Drive – 5th Avenue to W. 10th Street
Water Main Replacement/Looping
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	110	L.F.	\$80	\$ 8,800
Water Main, 6" Dia.	810	L.F.	\$65	\$ 52,650
Water Service Casing Pipe, 1-1/2" Dia.	85	L.F.	\$30	\$ 2,550
Water Service, 1" Dia.	110	L.F.	\$40	\$ 4,400
Machine Tapping Sleeve, 12"x6" w/ Gate Valve, 6" Dia.	2	Each	\$8,500	\$ 17,000
Fire Hydrant Complete	1	Each	\$5,500	\$ 5,500
Corp Stop and Curb Stop & Box, 1" Dia.	7	Each	\$900	\$ 6,300
Tracer Wire Access Box (Heavy Traffic)	2	Each	\$500	\$ 1,000
Tracer Wire Access Box (Light Traffic)	8	Each	\$250	\$ 2,000
Ductile Iron Fittings	640	LBS	\$13	\$ 8,320
Granular Select Backfill	285	C.Y.	\$30	\$ 8,550
Temporary Surface Over Trench	110	C.Y.	\$30	\$ 3,300
Bituminous Pavement Replacement	380	S.Y.	\$50	\$ 19,000
Curb and Gutter Replacement	20	L.F.	\$60	\$ 1,200
Class 1 Seeding and Pulverized Topsoil, 4"	60	L.F.	\$10	\$ 600
Abandon Existing Water Mains	1	L.S.	\$2,000	\$ 2,000
Traffic Control	1	L.S.	\$4,000	\$ 4,000
Construction				\$147,170
Contingency				\$ 14,830
Design Engineering (w/ Title Search and Easement Preparation)				\$ 17,000
Geotechnical				\$ 2,000
Construction Engineering				\$ 14,000
Total Project Cost				\$195,000

e. Project #4 – W. 13th Street Water Main Replacement/Looping – 5th Avenue to 1st Avenue

Description:

The existing water main on W. 13th Street from 5th Avenue to 1st Avenue is 4" diameter, serves twenty-two (22) residences, and dead ends. The water main has had multiple breaks in recent years.

It is recommended that a 6" diameter water main be constructed from the intersection of W. 13th Street and 5th Avenue east to 1st Avenue. This will eliminate an undersized main and one that the City has been dealing with a lot of breaks on over recent years, and will also create a loop. The W. 13th Street Water Main Replacement/Looping project is shown on Exhibit F-4.

Cost Estimate:

The probable cost estimate for the W. 13th Street Water Main Replacement/Looping project is \$355,000 as detailed in Table 22 below.

TABLE 22
W. 13th Street – 5th Avenue to 1st Avenue
Water Main Replacement/Looping
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Steel Casing Pipe, 20" Dia., Bored	70	L.F.	\$450	\$ 31,500
Water Main, 6" Dia.	900	L.F.	\$65	\$ 58,500
Water Service, 1" Dia.	520	L.F.	\$40	\$ 20,800
Machine Tapping Sleeve, 12"x6" w/ Gate Valve, 6" Dia.	1	Each	\$8,500	\$ 8,500
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	1	Each	\$7,500	\$ 7,500
Fire Hydrant Complete	2	Each	\$5,500	\$ 11,000
Corp Stop and Curb Stop & Box, 1" Dia.	22	Each	\$900	\$ 19,800
Tracer Wire Access Box (Heavy Traffic)	2	Each	\$500	\$ 1,000
Tracer Wire Access Box (Light Traffic)	22	Each	\$250	\$ 5,500
Ductile Iron Fittings	150	LBS	\$13	\$ 1,950
Granular Select Backfill	610	C.Y.	\$30	\$ 18,300
Temporary Surface Over Trench	235	C.Y.	\$30	\$ 7,050
Bituminous Pavement Replacement	710	S.Y.	\$50	\$ 35,500
Bituminous Driveway Replacement	30	S.Y.	\$50	\$ 1,500
Sidewalk Replacement	3,600	S.F.	\$10	\$ 36,000
Curb and Gutter Replacement	30	L.F.	\$60	\$ 1,800
Class 1 Seeding and Pulverized Topsoil, 4"	220	L.F.	\$10	\$ 2,200
Abandon Existing Water Mains	1	L.S.	\$2,000	\$ 2,000
Traffic Control	1	L.S.	\$2,000	\$ 2,000
Construction				\$272,400
Contingency				\$ 27,600
Design Engineering				\$ 26,000
Geotechnical				\$ 3,000
Construction Engineering				\$ 26,000
Total Project Cost				\$355,000

f. Project #5 – 6th Avenue Water Main Replacement – W. 14th Street to W. 13th Street

Description:

The existing water main on 6th Avenue from W. 14th Street to W. 13th Street is 6" diameter and serves ten (10) residences. The water main has had multiple breaks in recent years.

It is recommended that a 6" diameter water main be constructed from the intersection of 6th Avenue and W. 14th Street to W. 13th Street. This will eliminate a main the City has been dealing with a lot of breaks on over recent years. The 6th Avenue Water Main Replacement project is shown on Exhibit F-5.

Cost Estimate:

The probable cost estimate for the 6th Avenue Water Main Replacement project is \$233,000 as detailed in Table 23 below.

TABLE 23
 6th Avenue – W. 14th Street to W. 13th Street
 Water Main Replacement
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	50	L.F.	\$80	\$ 4,000
Water Main, 6" Dia.	550	L.F.	\$65	\$ 35,750
Water Service Casing Pipe, 1-1/2" Dia.	105	L.F.	\$30	\$ 3,150
Water Service, 1" Dia.	375	L.F.	\$40	\$ 15,000
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	1	Each	\$7,500	\$ 7,500
Line Stop, 6" Dia.	1	Each	\$5,500	\$ 5,500
Gate Valve, 6" Dia.	2	Each	\$2,000	\$ 4,000
Fire Hydrant Complete	2	Each	\$5,500	\$ 11,000
Corp Stop and Curb Stop & Box, 1" Dia.	10	Each	\$900	\$ 9,000
Tracer Wire Access Box (Heavy Traffic)	2	Each	\$500	\$ 1,000
Tracer Wire Access Box (Light Traffic)	10	Each	\$250	\$ 2,500
Ductile Iron Fittings	560	LBS	\$13	\$ 7,280
Granular Select Backfill	235	C.Y.	\$30	\$ 7,050
Temporary Surface Over Trench	90	C.Y.	\$30	\$ 2,700
Bituminous Pavement Replacement	160	S.Y.	\$50	\$ 8,000
Concrete Driveway Replacement	100	S.Y.	\$80	\$ 8,000
Sidewalk Replacement	2,000	S.F.	\$12	\$ 24,000
Curb and Gutter Replacement	250	L.F.	\$60	\$ 15,000
Class 1 Seeding and Pulverized Topsoil, 4"	450	L.F.	\$10	\$ 4,500
Abandon Existing Water Mains	1	L.S.	\$2,000	\$ 2,000
Traffic Control	1	L.S.	\$2,000	\$ 2,000
Construction				\$178,930
Contingency				\$ 17,070
Design Engineering				\$ 17,000
Geotechnical				\$ 3,000
Construction Engineering				\$ 17,000
Total Project Cost				\$233,000

g. Project #6

7th Avenue Water Main Replacement/Looping – W. 12th Street to W. 10th Street
8th Avenue Water Main Replacement – U.S. Route 30 to W. 10th Street
W. 10th Street Water Main Replacement – 8th Avenue to 5th Avenue

Description:

The existing water mains on 7th Avenue from W. 12th Street and W. 10th Street are undersized at 1" diameter, serve four (4) residences and a commercial building, and both dead end.

The existing 8" diameter water main on 8th Avenue from U.S. Route 30 to W. 10th Street serves thirty-four (34) residences. The major concern is the age of the water main and that it has had multiple breaks in recent years.

The existing water main on W. 10th Street from 8th Avenue to 5th Avenue consists of primarily 6" diameter and some 8" diameter and serves thirty-eight (38) residences. The major concern is the age of the water main and that it has had a very high amount of breaks in recent years.

It is recommended that a 6" diameter water main be constructed on 7th Avenue from W. 12th Street to W. 10th Street to connect to the existing 8" diameter water main on W. 12th Street and the existing 6" diameter water main on W. 10th Street. This will eliminate the undersized water mains and the dead ends, creating a loop.

It is recommended that an 8" diameter water main be constructed on 8th Avenue from north of U.S. Route 30 to W. 10th Street. This will eliminate a main the City has been dealing with a lot of water main breaks over the years.

It is recommended that an 8" diameter water main be constructed on W. 10th Street from 8th Avenue to 5th Avenue. This will eliminate a main the City has been dealing with a lot of breaks/repairs. This will also replace a 6" main that currently connects a 12" main at 5th Avenue to an 8" main at 8th Avenue, helping in improving capacity of the distribution in this part of the system, especially since it has a number of 6" and 4" feeder lines.

The 7th Avenue, 8th Avenue, and W. 10th Street Water Main Replacement/Looping project is shown on Exhibit F-6.

Cost Estimate:

The probable cost estimate for the 7th Avenue, 8th Avenue, and W. 10th Street Water Main Replacement/Looping project is \$1,351,000 as detailed in Table 24 below.

TABLE 24
7th Avenue – W. 12th Street to W. 10th Street
8th Avenue – U.S. Route 30 to W. 10th Street
W. 10th Street – 8th Avenue to 5th Avenue
Water Main Replacement/Looping
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 16" Dia.	920	L.F.	\$100	\$ 92,000
Watermain Quality Casing Pipe, 12" Dia.	80	L.F.	\$80	\$ 6,400
Water Main, 8" Dia.	3,200	L.F.	\$75	\$ 240,000
Water Main, 6" Dia.	820	L.F.	\$65	\$ 53,300
Water Service Casing Pipe, 1-1/2" Dia.	690	L.F.	\$30	\$ 20,700
Water Service, 2" Dia.	60	L.F.	\$50	\$ 3,000
Water Service, 1" Dia.	1,600	L.F.	\$40	\$ 64,000
Watermain Quality Storm Sewer	100	L.F.	\$50	\$ 5,000
Machine Tapping Sleeve, 12"x8" w/ Gate Valve, 8" Dia.	1	Each	\$9,000	\$ 9,000
Machine Tapping Sleeve, 8"x6" w/ Gate Valve, 6" Dia.	1	Each	\$8,000	\$ 8,000
Gate Valve, 8" Dia.	9	Each	\$2,500	\$ 22,500
Fire Hydrant Complete	5	Each	\$5,500	\$ 27,500
Corp Stop and Curb Stop & Box, 2" Dia.	1	Each	\$1,200	\$ 1,200
Corp Stop and Curb Stop & Box, 1" Dia.	67	Each	\$900	\$ 60,300
Tracer Wire Access Box (Heavy Traffic)	10	Each	\$500	\$ 5,000
Tracer Wire Access Box (Light Traffic)	72	Each	\$250	\$ 18,000
Ductile Iron Fittings	2,200	LBS	\$13	\$ 28,600
Granular Select Backfill	2,530	C.Y.	\$30	\$ 75,900
Temporary Surface Over Trench	970	C.Y.	\$30	\$ 29,100
Bituminous Pavement Replacement	3,220	S.Y.	\$50	\$ 161,000
Concrete Driveway Replacement	110	S.Y.	\$80	\$ 8,800
Curb and Gutter Replacement	1,630	L.F.	\$50	\$ 81,500
Class 1 Seeding and Pulverized Topsoil, 4"	900	L.F.	\$10	\$ 9,000
Abandon Existing Water Mains	1	L.S.	\$10,000	\$ 10,000
Traffic Control	1	L.S.	\$7,000	\$ 7,000
Construction				\$1,046,800
Contingency				\$ 104,200
Design Engineering				\$ 95,000
Geotechnical				\$ 10,000
Construction Engineering				\$ 95,000
Total Project Cost				\$1,351,000

h. Project # 7 – Flock Avenue Water Main Replacement – Roberts Street to U.S. Route 30

Description:

The existing water main on Flock Avenue from Roberts Street to U.S. Route 30 is 6" diameter and serves twenty-seven (27) residences. The water main has had multiple breaks in recent years.

It is recommended that a 6" diameter water main be constructed along Flock Avenue from Roberts Street to U.S. Route 30. This will eliminate a main the City has been dealing with a lot of breaks on over recent years. The Flock Avenue Water Main Replacement project is shown on Exhibit F-7.

Cost Estimate:

The probable cost estimate for the Flock Avenue Water Main Replacement project is \$447,000 as detailed in Table 25 below.

TABLE 25
 Flock Avenue – Roberts Street to U.S. Route 30
 Water Main Replacement
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	60	L.F.	\$80	\$ 4,800
Water Main, 6" Dia.	1,200	L.F.	\$65	\$ 78,000
Water Service, 1" Dia.	930	L.F.	\$40	\$ 37,200
Line Stop, 6" Dia.	2	Each	\$5,500	\$ 11,000
Gate Valve, 6" Dia.	5	Each	\$2,000	\$ 10,000
Fire Hydrant Complete	4	Each	\$5,500	\$ 22,000
Corp Stop and Curb Stop & Box, 1" Dia.	27	Each	\$900	\$ 24,300
Tracer Wire Access Box (Heavy Traffic)	2	Each	\$500	\$ 1,000
Tracer Wire Access Box (Light Traffic)	27	Each	\$250	\$ 6,750
Ductile Iron Fittings	1,000	LBS	\$13	\$ 13,000
Granular Select Backfill	950	C.Y.	\$30	\$ 28,500
Temporary Surface Over Trench	300	C.Y.	\$30	\$ 9,000
Bituminous Pavement Replacement	1,100	S.Y.	\$50	\$ 55,000
Sidewalk Replacement	1,100	S.F.	\$12	\$ 13,200
Curb and Gutter Replacement	300	L.F.	\$60	\$ 18,000
Class 1 Seeding and Pulverized Topsoil, 4"	450	L.F.	\$10	\$ 4,500
Abandon Existing Water Mains	1	L.S.	\$4,000	\$ 4,000
Traffic Control	1	L.S.	\$3,000	\$ 3,000
Construction				\$343,250
Contingency				\$ 34,750
Design Engineering				\$ 33,000
Geotechnical				\$ 3,000
Construction Engineering				\$ 33,000
Total Project Cost				\$447,000

i. Project # 8 – W. 14th Street Water Main Replacement – 13th Avenue to 12th Avenue

Description:

The existing water main on W. 14th Street from 13th Avenue to 12th Avenue is 6" diameter and serves nine (9) residences. The water main has had multiple breaks in recent years.

It is recommended that a 6" diameter water main be constructed from the intersection of W. 14th Street and 13th Avenue east to 12th Avenue. This will eliminate a main the City has been dealing with a lot of breaks on over recent years. The W. 14th Street Water Main Replacement project is shown on Exhibit F-8.

Cost Estimate:

The probable cost estimate for the W. 14th Street Water Main Replacement project is \$148,000 as detailed in Table 26 below.

TABLE 26
W. 14th Street – 13th Avenue to 12th Avenue
Water Main Replacement
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	50	L.F.	\$80	\$ 4,000
Water Main, 6" Dia.	520	L.F.	\$65	\$ 33,800
Water Service, 1" Dia.	320	L.F.	\$40	\$ 12,800
Machine Tapping Sleeve, 10"x6" w/ Gate Valve, 6" Dia.	1	Each	\$8,000	\$ 8,000
Line Stop, 6" Dia.	1	Each	\$5,500	\$ 5,500
Gate Valve, 6" Dia.	1	Each	\$2,000	\$ 2,000
Fire Hydrant Complete	1	Each	\$5,500	\$ 5,500
Corp Stop and Curb Stop & Box, 1" Dia.	9	Each	\$900	\$ 8,100
Tracer Wire Access Box (Heavy Traffic)	2	Each	\$500	\$ 1,000
Tracer Wire Access Box (Light Traffic)	9	Each	\$250	\$ 2,250
Ductile Iron Fittings	215	LBS	\$13	\$ 2,795
Granular Select Backfill	220	C.Y.	\$30	\$ 6,600
Temporary Surface Over Trench	85	C.Y.	\$30	\$ 2,550
Bituminous Pavement Replacement	100	S.Y.	\$50	\$ 5,000
Concrete Driveway Replacement	10	S.Y.	\$80	\$ 800
Sidewalk Replacement	40	S.F.	\$12	\$ 480
Curb and Gutter Replacement	50	L.F.	\$60	\$ 3,000
Class 1 Seeding and Pulverized Topsoil, 4"	430	L.F.	\$10	\$ 4,300
Abandon Existing Water Mains	1	L.S.	\$2,000	\$ 2,000
Traffic Control	1	L.S.	\$2,000	\$ 2,000
Construction				\$112,475
Contingency				\$ 11,525
Design Engineering				\$ 11,000
Geotechnical				\$ 2,000
Construction Engineering				\$ 11,000
Total Project Cost				\$148,000

j. Project #9

W. 18th Street, 12th Avenue, and W. 17th Street Water Main Replacement – East of 13th Avenue

Description:

The existing water mains on W. 18th Street from 13th Avenue to 12th Avenue, on 12th Avenue from W. 18th Street to W. 17th Street, and on W. 18th Street from 13th Avenue to 12th Avenue, are 6" diameter and serve thirty-two (32) residences. The water mains have had multiple breaks in recent years.

It is recommended that a 6" diameter water main be constructed from the intersection of W. 18th Street and 13th Avenue east to 12th Avenue, then north to W. 17th Street, and back west to 13th Avenue. This will eliminate a main the City has been dealing with a lot of breaks on over recent years. The W. 18th Street, 12th Avenue, and W. 17th Street Water Main Replacement project is shown on Exhibit F-9.

Cost Estimate:

The probable cost estimate for the W. 18th Street, 12th Avenue, and W. 17th Street Water Main Replacement project is \$421,000 as detailed in Table 27 below.

TABLE 27
 W. 18th Street, 12th Avenue, and W. 17th Street – East of 13th Avenue
 Water Main Replacement
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	400	L.F.	\$80	\$ 32,000
Water Main, 6" Dia.	1,350	L.F.	\$65	\$ 87,750
Water Service Casing Pipe, 1-1/2" Dia.	315	L.F.	\$30	\$ 9,450
Water Service, 1" Dia.	560	L.F.	\$40	\$ 22,400
Machine Tapping Sleeve, 10"x6" w/ Gate Valve, 6" Dia.	2	Each	\$8,000	\$ 16,000
Gate Valve, 6" Dia.	1	Each	\$3,000	\$ 3,000
Fire Hydrant Complete	4	Each	\$5,500	\$ 22,000
Corp Stop and Curb Stop & Box, 1" Dia.	31	Each	\$900	\$ 27,900
Tracer Wire Access Box (Heavy Traffic)	2	Each	\$500	\$ 1,000
Tracer Wire Access Box (Light Traffic)	33	Each	\$250	\$ 8,250
Ductile Iron Fittings	370	LBS	\$13	\$ 4,810
Granular Select Backfill	735	C.Y.	\$30	\$ 22,050
Temporary Surface Over Trench	280	C.Y.	\$30	\$ 8,400
Bituminous Pavement Replacement	750	S.Y.	\$50	\$ 37,500
Curb and Gutter Replacement	50	L.F.	\$60	\$ 3,000
Class 1 Seeding and Pulverized Topsoil, 4"	1,130	L.F.	\$10	\$ 11,300
Abandon Existing Water Mains	1	L.S.	\$4,000	\$ 4,000
Traffic Control	1	L.S.	\$3,000	\$ 3,000
Construction				\$323,810
Contingency				\$ 32,190
Design Engineering				\$ 30,000
Geotechnical				\$ 5,000
Construction Engineering				\$ 30,000
Total Project Cost				\$421,000

k. Project #10

13th Avenue, W. 20th Street, and 11th Avenue Water Main Replacement – North of W. 21st Street

Description:

The existing water mains on 13th Avenue from W. 21st Street to W. 20th Street, on W. 20th Street from 13th Avenue to 11th Avenue, and on 11th Avenue from W. 20th Street to W. 21st Street, are 6" diameter and serve thirty-eight (38) residences. The water mains have had multiple breaks in recent years.

It is recommended that a 6" diameter water main be constructed from the intersection of 13th Avenue and W. 21st Street north to W. 20th Street, then east to 11th Avenue, and south on 11th Avenue to W. 21st Street. This will eliminate a main the City has been dealing with a lot of breaks on over recent years. The 13th Avenue, W. 20th Street, and 11th Avenue Water Main Replacement project is shown on Exhibit F-10.

Cost Estimate:

The probable cost estimate for the 13th Avenue, W. 20th Street, and 11th Avenue Water Main Replacement project is \$601,000 as detailed in Table 28 below.

TABLE 28
 13th Avenue, W. 20th Street, and 11th Avenue – North of W. 21st Street
 Water Main Replacement
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	400	L.F.	\$80	\$ 32,000
Water Main, 6" Dia.	1,700	L.F.	\$65	\$110,500
Water Service Casing Pipe, 1-1/2" Dia.	300	L.F.	\$30	\$ 9,000
Water Service, 1" Dia.	1,300	L.F.	\$40	\$ 52,000
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	2	Each	\$7,500	\$ 15,000
Line Stop, 6" Dia.	2	Each	\$5,500	\$ 11,000
Gate Valve, 6" Dia.	4	Each	\$2,000	\$ 8,000
Fire Hydrant Complete	3	Each	\$5,500	\$ 16,500
Corp Stop and Curb Stop & Box, 1" Dia.	38	Each	\$900	\$ 34,200
Tracer Wire Access Box (Heavy Traffic)	5	Each	\$500	\$ 2,500
Tracer Wire Access Box (Light Traffic)	38	Each	\$250	\$ 9,500
Ductile Iron Fittings	640	LBS	\$13	\$ 8,320
Granular Select Backfill	1,120	C.Y.	\$30	\$ 33,600
Temporary Surface Over Trench	430	C.Y.	\$30	\$ 12,900
Bituminous Pavement Replacement	1,260	S.Y.	\$50	\$ 63,000
Bituminous Driveway Replacement	100	S.Y.	\$60	\$ 6,000
Sidewalk Replacement	1,250	S.F.	\$12	\$ 15,000
Curb and Gutter Replacement	50	L.F.	\$60	\$ 3,000
Class 1 Seeding and Pulverized Topsoil, 4"	1,100	L.F.	\$10	\$ 11,000
Abandon Existing Water Mains	1	L.S.	\$4,000	\$ 4,000
Traffic Control	1	L.S.	\$3,000	\$ 3,000
Construction				\$460,020
Contingency				\$ 45,980
Design Engineering				\$ 45,000
Geotechnical				\$ 5,000
Construction Engineering				\$ 45,000
Total Project Cost				\$601,000

I. Project #11 – Bennett Drive Water Main Replacement/Looping – 14th Avenue to U.S. Route 30

Description:

The existing 6" diameter water main runs the length of Bennett Drive from 14th Avenue to the west end of Bennett Drive and then to the north and dead ends on the south side of U.S. Route 30. The City has had breaks on this water main segment and anticipate more breaks in the future. Also, to the east of the 6" dead end line is another dead end 8" diameter watermain on the south side of U.S. Route 30.

It is recommended to replace the existing 6" diameter water main on Bennett Drive from 14th Avenue to the west end of Bennett Drive, then north to U.S. Route 30, and extend a new 8" diameter watermain to the east, connecting to the existing 8" diameter water main.

The connection at 14th Avenue will be at the west side of the intersection as the City had a line bored under 14th Avenue in October 2017 prior to the reconstruction of 14th Avenue in 2018. The Bennett Drive Water Main Replacement project is shown on Exhibit F-11.

Cost Estimate:

The probable cost estimate for the Bennett Drive Water Main Replacement/Looping project is \$467,000 as detailed in Table 29 below.

TABLE 29
Bennett Drive – 14th Avenue to U.S. Route 30
Water Main Replacement/Looping
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	190	L.F.	\$80	\$ 15,200
Water Main, 8" Dia.	385	L.F.	\$80	\$ 30,800
Water Main, 6" Dia.	1,500	L.F.	\$65	\$ 97,500
Water Service Casing Pipe, 1-1/2" Dia.	230	L.F.	\$30	\$ 6,900
Water Service, 1" Dia.	600	L.F.	\$40	\$ 24,000
Gate Valve, 8" Dia.	3	Each	\$2,500	\$ 7,500
Gate Valve, 6" Dia.	2	Each	\$2,000	\$ 4,000
Corp Stop and Curb Stop & Box, 1" Dia.	25	Each	\$900	\$ 22,500
Fire Hydrant Complete	4	Each	\$5,500	\$ 22,000
Tracer Wire Access Box (Heavy Traffic)	2	Each	\$500	\$ 1,000
Tracer Wire Access Box (Light Traffic)	30	Each	\$250	\$ 7,500
Ductile Iron Fittings	425	LBS	\$13	\$ 5,525
Granular Select Backfill	900	C.Y.	\$30	\$ 27,000
Temporary Surface Over Trench	350	C.Y.	\$30	\$ 10,500
Bituminous Pavement Replacement	960	S.Y.	\$35	\$ 33,600
Concrete Driveway Replacement	150	S.Y.	\$80	\$ 12,000
Sidewalk Replacement	550	S.F.	\$12	\$ 6,600
Curb and Gutter Replacement	10	L.F.	\$100	\$ 1,000
Class 1 Seeding and Pulverized Topsoil, 4"	900	L.F.	\$10	\$ 9,000
Abandon Existing Water Mains	1	L.S.	\$4,000	\$ 4,000
Traffic Control	1	L.S.	\$10,000	\$ 10,000
Construction				\$358,125
Contingency				\$ 35,875
Design Engineering (w/ Title Search and Easement Preparation)				\$ 36,500
Geotechnical				\$ 4,000
Construction Engineering				\$ 32,500
Total Project Cost				\$467,000

m. Project #12 – 10th Avenue Water Main Replacement – W. 10th Street to W. 7th Street

Description:

The existing water main on 10th Avenue from south of W. 10th Street to W. 7th Street consists of 2" and 6" diameter and serves twenty-three (23) residences and a church. A portion of the water main is undersized at 2" and the 6" has had multiple breaks in recent years.

It is recommended that a 6" diameter water main be constructed on 10th Avenue from south of the intersection of W. 10th Street to W. 7th Street. This will eliminate an undersized main and a main the City has been dealing with a lot of breaks on over recent years. The 10th Avenue Water Main Replacement project is shown on Exhibit F-12.

Cost Estimate:

The probable cost estimate for the 10th Avenue Water Main Replacement project is \$336,000 as detailed in Table 30 below.

TABLE 30
10th Avenue – W. 10th Street to W. 7th Street
Water Main Replacement
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	400	L.F.	\$80	\$ 32,000
Water Main, 6" Dia.	900	L.F.	\$65	\$ 58,500
Water Service Casing Pipe, 1-1/2" Dia.	190	L.F.	\$30	\$ 5,700
Water Service, 1" Dia.	825	L.F.	\$40	\$ 33,000
Insertion Valve, 6" Dia.	2	Each	\$5,500	\$ 11,000
Fire Hydrant Complete	3	Each	\$5,500	\$ 16,500
Corp Stop and Curb Stop & Box, 1" Dia.	24	Each	\$900	\$ 21,600
Tracer Wire Access Box (Heavy Traffic)	3	Each	\$500	\$ 1,500
Tracer Wire Access Box (Light Traffic)	24	Each	\$250	\$ 6,000
Ductile Iron Fittings	420	LBS	\$13	\$ 5,460
Granular Select Backfill	420	C.Y.	\$30	\$ 12,600
Temporary Surface Over Trench	160	C.Y.	\$30	\$ 4,800
Bituminous Pavement Replacement	150	S.Y.	\$50	\$ 7,500
Concrete Driveway Replacement	110	S.Y.	\$80	\$ 8,800
Sidewalk Replacement	1,400	S.F.	\$12	\$ 16,800
Curb and Gutter Replacement	60	L.F.	\$60	\$ 3,600
Class 1 Seeding and Pulverized Topsoil, 4"	630	L.F.	\$10	\$ 6,300
Abandon Existing Water Mains	1	L.S.	\$1,000	\$ 1,000
Traffic Control	1	L.S.	\$3,000	\$ 3,000
Construction				\$258,660
Contingency				\$ 25,340
Design Engineering				\$ 25,000
Geotechnical				\$ 2,000
Construction Engineering				\$ 25,000
Total Project Cost				\$336,000

n. Project #13 – 7th Avenue Water Main Replacement – W. 6th Street to South of W. 7th Street

Description:

The existing water main on 7th Avenue from W. 6th Street to south of W. 7th Street is 4" diameter, serves twenty-one (21) residences, with some branching off of other services.

It is recommended that a 6" diameter water main be constructed on 7th Avenue from W. 6th Street to south of W. 7th Street, connecting to existing 6" diameter water main on each end. This will eliminate an aging 4" diameter water main and some branching services. The 7th Avenue Water Main Replacement project is shown on Exhibit F-13.

Cost Estimate:

The probable cost estimate for the 7th Avenue Water Main Replacement project is \$295,000 as detailed in Table 31 below.

TABLE 31
 7th Avenue – W. 6th Street to South of W. 7th Street
 Water Main Replacement
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	300	L.F.	\$80	\$ 24,000
Water Main, 6" Dia.	800	L.F.	\$65	\$ 52,000
Water Service Casing Pipe, 1-1/2" Dia.	210	L.F.	\$20	\$ 4,200
Water Service, 1" Dia.	615	L.F.	\$40	\$ 24,600
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	1	Each	\$7,500	\$ 7,500
Fire Hydrant Complete	2	Each	\$5,500	\$ 11,000
Corp Stop and Curb Stop & Box, 1" Dia.	21	Each	\$900	\$ 18,900
Tracer Wire Access Box (Heavy Traffic)	3	Each	\$500	\$ 1,500
Tracer Wire Access Box (Light Traffic)	21	Each	\$250	\$ 5,250
Ductile Iron Fittings	400	LBS	\$13	\$ 5,200
Granular Select Backfill	550	C.Y.	\$30	\$ 16,500
Temporary Surface Over Trench	210	C.Y.	\$30	\$ 6,300
Bituminous Pavement Replacement	700	S.Y.	\$50	\$ 35,000
Sidewalk Replacement	450	S.F.	\$12	\$ 5,400
Class 1 Seeding and Pulverized Topsoil, 4"	300	L.F.	\$10	\$ 3,000
Abandon Existing Water Mains	1	L.S.	\$5,000	\$ 5,000
Traffic Control	1	L.S.	\$3,000	\$ 3,000
Construction				\$228,350
Contingency				\$ 22,650
Design Engineering				\$ 21,000
Geotechnical				\$ 2,000
Construction Engineering				\$ 21,000
Total Project Cost				\$295,000

o. Project #14 – W. 8th Street Water Main Replacement – 6th Avenue to 5th Avenue

Description:

The existing water main on W. 8th Street from 6th Avenue to 5th Avenue is 4" diameter and serves twenty-five (25) residences. The existing water main is aging and has had a number of breaks in recent years.

It is recommended that a 6" diameter water main be constructed on W. 8th Street, connecting to an existing 12" diameter water main on 6th Avenue and a 6" diameter water main on 5th Avenue. The W. 8th Street Water Main Replacement project is shown on Exhibit F-14.

Cost Estimate:

The probable cost estimate for the W. 8th Street Water Main Replacement project is \$329,000 as detailed in Table 32 below.

TABLE 32
W. 8th Street – 6th Avenue to 5th Avenue
Water Main Replacement
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	400	L.F.	\$80	\$ 32,000
Water Main, 6" Dia.	1,150	L.F.	\$65	\$ 74,750
Water Service Casing Pipe, 1-1/2" Dia.	250	L.F.	\$30	\$ 7,500
Water Service, 1" Dia.	600	L.F.	\$40	\$ 24,000
Machine Tapping Sleeve, 12"x6" w/ Gate Valve, 6" Dia.	1	Each	\$8,500	\$ 8,500
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	1	Each	\$7,500	\$ 7,500
Fire Hydrant Complete	3	Each	\$5,500	\$ 16,500
Corp Stop and Curb Stop & Box, 1" Dia.	25	Each	\$900	\$ 22,500
Tracer Wire Access Box (Heavy Traffic)	2	Each	\$500	\$ 1,000
Tracer Wire Access Box (Light Traffic)	26	Each	\$250	\$ 6,500
Ductile Iron Fittings	300	LBS	\$13	\$ 3,900
Granular Select Backfill	680	C.Y.	\$30	\$ 20,400
Temporary Surface Over Trench	260	C.Y.	\$30	\$ 7,800
Bituminous Pavement Replacement	50	S.Y.	\$50	\$ 2,500
Curb and Gutter Replacement	20	L.F.	\$60	\$ 1,200
Class 1 Seeding and Pulverized Topsoil, 4"	1,150	L.F.	\$10	\$ 11,500
Abandon Existing Water Mains	1	L.S.	\$4,000	\$ 4,000
Traffic Control	1	L.S.	\$3,000	\$ 3,000
Construction				\$255,050
Contingency				\$ 25,950
Design Engineering				\$ 23,000
Geotechnical				\$ 2,000
Construction Engineering				\$ 23,000
Total Project Cost				\$329,000

p. Project #15 – Stanley Court to Garden Circle Water Main Extension/Looping

Description:

The existing water main on Stanley Court east of 5th Avenue is 6" diameter, serves thirteen (13) residences, and dead ends. The nearest feasible water main to connect into, to create a loop, is to the north on Garden Circle, and is 6" diameter.

It is recommended that a 6" diameter water main be directionally bored from the dead end of the existing 6" diameter water main on the east end of Stanley Court to the existing 6" diameter water main at the southeast corner of Garden Circle, creating a loop. The Stanley Court to Garden Circle Water Main Extension/Looping project is shown on Exhibit F-15.

Cost Estimate:

The probable cost estimate for the Stanley Court to Garden Circle Water Main Extension/Looping project is \$62,000 as detailed in Table 33 below.

TABLE 33
 Stanley Court to Garden Circle
 Water Main Extension/Looping
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	30	L.F.	\$80	\$ 2,400
Water Main, 6" Dia., Directionally Bored	200	L.F.	\$75	\$ 15,000
Water Main, 6" Dia.	50	L.F.	\$65	\$ 3,250
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	2	Each	\$7,500	\$ 15,000
Tracer Wire Access Box (Heavy Traffic)	2	Each	\$500	\$ 1,000
Ductile Iron Fittings	180	LBS	\$13	\$ 2,340
Granular Select Backfill	25	C.Y.	\$30	\$ 750
Temporary Surface Over Trench	10	C.Y.	\$30	\$ 300
Bituminous Pavement Replacement	25	S.Y.	\$50	\$ 1,250
Curb and Gutter Replacement	10	L.F.	\$60	\$ 600
Class 1 Seeding and Pulverized Topsoil, 4"	50	L.F.	\$10	\$ 500
Traffic Control	1	L.S.	\$1,000	\$ 1,000
Construction				\$43,390
Contingency				\$ 4,610
Design Engineering (w/ Title Search and Easement Preparation)				\$ 7,500
Geotechnical				\$ 2,000
Construction Engineering				\$ 4,500
Total Project Cost				\$62,000

q. Project #16

E. 13th Street & Avenue C Water Main Replacement/Looping – Mary Avenue to E. 11th Street

Description:

The existing water main on E. 13th Street from Mary Avenue to the east toward Centennial Park is 2" diameter, serves seven (7) residences, and is a dead end. The existing water main on Avenue C from E. 11th Street to the south toward Centennial Park is 4" diameter, serves five (5) residences and the Coloma Township Building, and is also a dead end.

It is recommended that a 6" diameter water main be constructed on E. 13th Street, east of Mary Avenue, extend the water main northeasterly through Centennial Park to Avenue C, and northerly on Avenue C to north of E. 11th Street. This will eliminate undersized water mains, create a loop, and eliminating two dead ends. The E. 13th Street & Avenue C Water Main Replacement/Looping project is shown on Exhibit F-16.

Cost Estimate:

The probable cost estimate for the E. 13th Street & Avenue C Water Main Replacement/Looping project is \$294,000 as detailed in Table 34 below.

TABLE 34
 E. 13th Street & Avenue C – Mary Avenue to E. 11th Street
 Water Main Replacement/Looping
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	180	L.F.	\$80	\$ 14,400
Water Main, 6" Dia.	1,350	L.F.	\$65	\$ 87,750
Water Service Casing Pipe, 1-1/2" Dia.	65	L.F.	\$30	\$ 1,950
Water Service, 1" Dia.	410	L.F.	\$40	\$ 16,400
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	1	Each	\$7,500	\$ 7,500
Line Stop, 6" Dia.	1	Each	\$5,500	\$ 5,500
Gate Valve, 6" Dia.	2	Each	\$2,000	\$ 4,000
Fire Hydrant Complete	3	Each	\$5,500	\$ 16,500
Corp Stop and Curb Stop & Box, 1" Dia.	13	Each	\$900	\$ 11,700
Tracer Wire Access Box (Heavy Traffic)	1	Each	\$500	\$ 500
Tracer Wire Access Box (Light Traffic)	16	Each	\$250	\$ 4,000
Ductile Iron Fittings	470	LBS	\$13	\$ 6,110
Granular Select Backfill	355	C.Y.	\$30	\$ 10,650
Temporary Surface Over Trench	135	C.Y.	\$30	\$ 4,050
Bituminous Pavement Replacement	475	S.Y.	\$50	\$ 23,750
Class 1 Seeding and Pulverized Topsoil, 4"	600	L.F.	\$10	\$ 6,000
Abandon Existing Water Mains	1	L.S.	\$3,000	\$ 3,000
Traffic Control	1	L.S.	\$3,000	\$ 3,000
Construction				\$226,760
Contingency				\$ 22,240
Design Engineering (w/ Title Search and Easement Preparation)				\$ 23,000
Geotechnical				\$ 2,000
Construction Engineering				\$ 20,000
Total Project Cost				\$294,000

- r. Project #17 – Burlington Terrace and E. 6th Street Water Main Replacement/Looping – E. 5th Street to Avenue C

Description:

The existing water main on Burlington Terrace from E. 5th Street toward E. 6th Street is undersized at 1" diameter, serves two (2) residences, and is a dead end. The existing water main on E. 6th Street from Avenue A to Burlington Terrace is 6" diameter, but dead ends. The existing water main on E. 6th Street from Avenue C toward Burlington Terrace is 4" diameter and dead ends.

It is recommended that a 6" diameter water main be constructed on Burlington Terrace from E. 5th Street to E. 6th Street to connect to the existing 6" diameter water main. Also, construct a 6" diameter water main on E. 6th Street from Avenue C to the west and connect to the new 6" diameter water main on Burlington Terrace. The Burlington Terrace and E. 6th Street Water Main Replacement/Looping project is shown on Exhibit F-17.

Cost Estimate:

The probable cost estimate for the Burlington Terrace and E. 6th Street Water Main Replacement/Looping project is \$289,000 as detailed in Table 35 below.

TABLE 35
Burlington Terrace and E. 6th Street Water Main Replacement/Looping
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	200	L.F.	\$80	\$ 16,000
Water Main, 6" Dia.	1,200	L.F.	\$65	\$ 78,000
Water Service Casing Pipe, 1-1/2" Dia.	100	L.F.	\$30	\$ 3,000
Water Service, 1" Dia.	225	L.F.	\$40	\$ 9,000
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	1	Each	\$7,500	\$ 7,500
Machine Tapping Sleeve w/ Gate Valve, 4" Dia.	1	Each	\$7,000	\$ 7,000
Gate Valve, 6" Dia.	1	Each	\$2,000	\$ 2,000
Fire Hydrant Complete	3	Each	\$5,500	\$ 16,500
Corp Stop and Curb Stop & Box, 1" Dia.	12	Each	\$900	\$ 10,800
Tracer Wire Access Box (Heavy Traffic)	4	Each	\$500	\$ 2,000
Tracer Wire Access Box (Light Traffic)	12	Each	\$250	\$ 3,000
Ductile Iron Fittings	415	LBS	\$13	\$ 5,395
Granular Select Backfill	550	C.Y.	\$30	\$ 15,500
Temporary Surface Over Trench	200	C.Y.	\$30	\$ 6,000
Bituminous Pavement Replacement	370	S.Y.	\$50	\$ 18,500
Concrete Driveway Replacement	25	S.Y.	\$80	\$ 2,000
Sidewalk Replacement	40	S.F.	\$12	\$ 480
Curb and Gutter Replacement	10	L.F.	\$60	\$ 600
Class 1 Seeding and Pulverized Topsoil, 4"	900	L.F.	\$10	\$ 9,000
Abandon Existing Water Mains	1	L.S.	\$3,000	\$ 3,000
Traffic Control	1	L.S.	\$3,000	\$ 3,000
Construction				\$219,275
Contingency				\$ 21,725
Design Engineering (w/ Title Search and Easement Preparation)				\$ 24,000
Geotechnical				\$ 4,000
Construction Engineering				\$ 20,000
Total Project Cost				\$289,000

s. Project #18 – Smith Court and Goodell Court Water Main Replacement/Looping

Description:

The existing water mains on Smith Court and Goodell Court, south of E. 4th Street are undersized at 1" diameter, serve eight (8) residences, and both are dead ends.

It is recommended that a 6" diameter water main be constructed on Smith Court from E. 4th Street to the south, then west to Goodell Court, and north on Goodell Court to E. 4th Street. This will eliminate the undersized water mains and create a loop. The Smith Court and Goodell Court Water Main Replacement/Looping project is shown on Exhibit F-18.

Cost Estimate:

The probable cost estimate for the Smith Court and Goodell Court Water Main Replacement/Looping is \$216,000 as detailed in Table 36 below.

TABLE 36
 Smith Court and Goodell Court Water Main Replacement/Looping
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	160	L.F.	\$80	\$ 12,800
Water Main, 6" Dia.	900	L.F.	\$65	\$ 58,500
Water Service, 1" Dia.	200	L.F.	\$40	\$ 8,000
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	2	Each	\$7,500	\$ 15,000
Fire Hydrant Complete	2	Each	\$5,500	\$ 11,000
Corp Stop and Curb Stop & Box, 1" Dia.	8	Each	\$900	\$ 7,200
Tracer Wire Access Box (Heavy Traffic)	3	Each	\$500	\$ 1,500
Tracer Wire Access Box (Light Traffic)	8	Each	\$250	\$ 2,000
Ductile Iron Fittings	230	LBS	\$13	\$ 2,990
Granular Select Backfill	340	C.Y.	\$30	\$ 10,200
Temporary Surface Over Trench	130	C.Y.	\$30	\$ 3,900
Bituminous Pavement Replacement	460	S.Y.	\$50	\$ 23,000
Concrete Driveway Replacement	20	S.Y.	\$80	\$ 1,600
Sidewalk Replacement	40	S.F.	\$12	\$ 480
Curb and Gutter Replacement	30	L.F.	\$60	\$ 1,800
Class 1 Seeding and Pulverized Topsoil, 4"	250	L.F.	\$10	\$ 2,500
Abandon Existing Water Mains	1	L.S.	\$2,000	\$ 2,000
Traffic Control	1	L.S.	\$3,000	\$ 3,000
Construction				\$167,470
Contingency				\$ 16,530
Design Engineering				\$ 15,000
Geotechnical				\$ 2,000
Construction Engineering				\$ 15,000
Total Project Cost				\$216,000

t. Project #19 – Avenue C Water Main Replacement – Dixon Avenue to E. 4th Street

Description:

The existing water main on Avenue C between Dixon Avenue and E. 4th Street include both 2" and 4" diameter, are undersized, serve eight (8) residences, and has had several leaks.

It is recommended that a 6" diameter water main be constructed on Avenue C from Dixon Avenue to E. 4th Street. This will eliminate the undersized water mains and eliminate a segment with frequent breaks. The Avenue C Water Main Replacement project is shown on Exhibit F-19.

Cost Estimate:

The probable cost estimate for the Avenue C Water Main Replacement project is \$184,000 as detailed in Table 37 below.

TABLE 37
Avenue C – Dixon Avenue to E. 4th Street
Water Main Replacement
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	160	L.F.	\$80	\$ 12,800
Water Main, 6" Dia.	500	L.F.	\$65	\$ 32,500
Water Service Casing Pipe, 1-1/2" Dia.	85	L.F.	\$30	\$ 2,550
Water Service, 1" Dia.	260	L.F.	\$40	\$ 10,400
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	2	Each	\$7,500	\$ 15,000
Fire Hydrant Complete	1	Each	\$5,500	\$ 5,500
Corp Stop and Curb Stop & Box, 1" Dia.	8	Each	\$900	\$ 7,200
Tracer Wire Access Box (Heavy Traffic)	2	Each	\$500	\$ 1,000
Tracer Wire Access Box (Light Traffic)	8	Each	\$250	\$ 2,000
Ductile Iron Fittings	145	LBS	\$13	\$ 1,885
Granular Select Backfill	300	C.Y.	\$30	\$ 9,000
Temporary Surface Over Trench	115	C.Y.	\$30	\$ 3,450
Bituminous Pavement Replacement	380	S.Y.	\$50	\$ 19,000
Concrete Driveway Replacement	10	S.Y.	\$80	\$ 800
Sidewalk Replacement	1,100	S.F.	\$12	\$ 13,200
Curb and Gutter Replacement	20	L.F.	\$60	\$ 1,200
Class 1 Seeding and Pulverized Topsoil, 4"	50	L.F.	\$10	\$ 500
Abandon Existing Water Mains	1	L.S.	\$2,000	\$ 2,000
Traffic Control	1	L.S.	\$3,000	\$ 3,000
Construction				\$142,985
Contingency				\$ 14,015
Design Engineering				\$ 13,000
Geotechnical				\$ 2,000
Construction Engineering				\$ 12,000
Total Project Cost				\$184,000

u. Project #20 – Avenue E Water Main Replacement – E. 7th Street to E. 6th Street

Description:

The existing water main on Avenue E between E. 7th Street and E. 6th Street is 4" diameter, has had multiple breaks, and runs parallel with a sanitary forcemain with only about 4-5 feet of horizontal separation.

It is recommended that a 6" diameter water main be constructed on Avenue E from E. 7th to E. 6th Street. This will eliminate a segment with frequent breaks, and the water main will meet current standards for separation from the sanitary forcemain. The Avenue E Water Main Replacement project is shown on Exhibit F-20.

Cost Estimate:

The probable cost estimate for the Avenue E Water Main Replacement project is \$151,000 as detailed in Table 38 below.

TABLE 38
 Avenue E – E. 7th Street to E. 6th Street
 Water Main Replacement
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	80	L.F.	\$80	\$ 6,400
Water Main, 6" Dia.	600	L.F.	\$65	\$ 39,000
Water Service Casing Pipe, 1-1/2" Dia.	30	L.F.	\$30	\$ 900
Water Service, 1" Dia.	40	L.F.	\$40	\$ 1,600
Line Stop, 6" Dia.	2	Each	\$5,500	\$ 11,000
Gate Valve, 6" Dia.	2	Each	\$2,500	\$ 5,000
Fire Hydrant Complete	2	Each	\$5,500	\$ 11,000
Corp Stop and Curb Stop & Box, 1" Dia.	1	Each	\$900	\$ 900
Tracer Wire Access Box (Heavy Traffic)	3	Each	\$500	\$ 1,500
Tracer Wire Access Box (Light Traffic)	1	Each	\$250	\$ 250
Ductile Iron Fittings	425	LBS	\$13	\$ 5,525
Granular Select Backfill	290	C.Y.	\$30	\$ 8,700
Temporary Surface Over Trench	110	C.Y.	\$30	\$ 3,300
Bituminous Pavement Replacement	215	S.Y.	\$50	\$ 10,750
Class 1 Seeding and Pulverized Topsoil, 4"	570	L.F.	\$10	\$ 5,700
Abandon Existing Water Mains	1	L.S.	\$2,000	\$ 2,000
Traffic Control	1	L.S.	\$2,000	\$ 2,000
Construction				\$115,525
Contingency				\$ 11,475
Design Engineering				\$ 11,000
Geotechnical				\$ 2,000
Construction Engineering				\$ 11,000
Total Project Cost				\$151,000

v. Project #21 – Circle Drive to Martin Road Water Main Replacement – North of Dixon Avenue

Description:

The existing water main on Circle Drive and the water main that extends east to Martin Road is 4" diameter and serves thirteen (13) apartment buildings and two (2) residences. The main is undersized, has significant aging, and has had several breaks in recent years.

It is recommended that a 6" diameter water main be constructed on Circle Drive from north of Dixon Avenue to the north end of Circle Drive and east to Martin Road. The Circle Drive to Martin Road Water Main Replacement project is shown on Exhibit F-21.

Cost Estimate:

The probable cost estimate for the Circle Drive to Martin Road Water Main Replacement project is \$259,000 as detailed in Table 39 below.

TABLE 39
Circle Drive to Martin Road
Water Main Replacement
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	140	L.F.	\$80	\$ 11,200
Water Main, 6" Dia.	800	L.F.	\$65	\$ 52,000
Water Service Casing Pipe, 3" Dia.	110	L.F.	\$40	\$ 4,400
Water Service Casing Pipe, 1-1/2" Dia.	130	L.F.	\$30	\$ 3,900
Water Service, 2" Dia.	220	L.F.	\$45	\$ 9,900
Water Service, 1" Dia.	260	L.F.	\$40	\$ 10,400
Machine Tapping Sleeve, 8"x6" w/ Gate Valve, 6" Dia.	1	Each	\$8,000	\$ 8,000
Machine Tapping Sleeve w/ Gate Valve, 6" Dia.	1	Each	\$7,500	\$ 7,500
Fire Hydrant Complete	2	Each	\$5,500	\$ 11,000
Corp Stop and Curb Stop & Box, 2" Dia.	8	Each	\$1,200	\$ 9,600
Corp Stop and Curb Stop & Box, 1" Dia.	12	Each	\$900	\$ 10,800
Tracer Wire Access Box (Heavy Traffic)	3	Each	\$500	\$ 1,500
Tracer Wire Access Box (Light Traffic)	21	Each	\$250	\$ 5,250
Ductile Iron Fittings	450	LBS	\$13	\$ 5,850
Granular Select Backfill	280	C.Y.	\$30	\$ 8,400
Temporary Surface Over Trench	110	C.Y.	\$30	\$ 3,300
Bituminous Pavement Replacement	300	S.Y.	\$50	\$ 15,000
Concrete Driveway Replacement	20	S.Y.	\$75	\$ 1,500
Sidewalk Replacement	60	S.F.	\$12	\$ 720
Curb and Gutter Replacement	100	L.F.	\$60	\$ 6,000
Class 1 Seeding and Pulverized Topsoil, 4"	550	L.F.	\$10	\$ 5,500
Abandon Existing Water Mains	1	L.S.	\$4,000	\$ 4,000
Traffic Control	1	L.S.	\$3,000	\$ 3,000
Construction				\$198,720
Contingency				\$ 19,280
Design Engineering (w/ Title Search and Easement Preparation)				\$ 20,000
Geotechnical				\$ 3,000
Construction Engineering				\$ 18,000
Total Project Cost				\$259,000

w. Project #22 – Wiker Drive Water Main Replacement – Franklin Drive to Dixon Avenue

Description:

The existing water main on Wiker Drive from Franklin Drive to Dixon Avenue is 6" diameter and serves thirty-five (35) residences. The main has had a number of breaks in recent years. The 12" diameter water transmission main at the south end of Wiker Drive is intended to be extended to the north to reinforce the smaller water mains in the northeast part of the distribution system and eventually connect to an existing 10" diameter water main on E. 2nd Street.

It is recommended that a 12" diameter water main be constructed on Wiker Drive from Franklin Drive to Dixon Avenue. The Wiker Drive Water Main Replacement project is shown on Exhibit F-22.

Cost Estimate:

The probable cost estimate for the Wiker Drive Water Main Replacement project is \$750,000 as detailed in Table 40 below.

TABLE 40
Wiker Drive – Franklin Drive to Dixon Avenue
Water Main Replacement
Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 20" Dia.	100	L.F.	\$120	\$ 12,000
Water Main, 12" Dia.	2,350	L.F.	\$95	\$223,250
Water Service Casing Pipe, 1-1/2" Dia.	100	L.F.	\$30	\$ 3,000
Water Service, 1" Dia.	1,000	L.F.	\$40	\$ 40,000
Machine Tapping Sleeve, w/ Gate Valve, 12" Dia.	1	Each	\$10,000	\$ 10,000
Gate Valve, 12" Dia.	7	Each	\$4,000	\$ 28,000
Gate Valve, 6" Dia.	5	Each	\$2,000	\$ 10,000
Fire Hydrant Complete	6	Each	\$5,500	\$ 33,000
Corp Stop and Curb Stop & Box, 1" Dia.	35	Each	\$900	\$ 31,500
Tracer Wire Access Box (Heavy Traffic)	3	Each	\$500	\$ 1,500
Tracer Wire Access Box (Light Traffic)	39	Each	\$250	\$ 9,750
Ductile Iron Fittings	3,050	LBS	\$13	\$ 39,650
Granular Select Backfill	700	C.Y.	\$30	\$ 21,000
Temporary Surface Over Trench	270	C.Y.	\$30	\$ 8,100
Bituminous Pavement Replacement	460	S.Y.	\$50	\$ 23,000
Concrete Driveway Replacement	250	S.Y.	\$75	\$ 18,750
Bituminous Driveway Replacement	60	S.Y.	\$60	\$ 3,600
Curb and Gutter Replacement	430	L.F.	\$60	\$ 25,800
Class 1 Seeding and Pulverized Topsoil, 4"	2,100	L.F.	\$10	\$ 21,000
Abandon Existing Water Mains	1	L.S.	\$8,000	\$ 8,000
Traffic Control	1	L.S.	\$5,000	\$ 5,000
Construction				\$575,900
Contingency				\$ 57,600
Design Engineering				\$ 55,000
Geotechnical				\$ 6,500
Construction Engineering				\$ 55,000
Total Project Cost				\$750,000

x. Project #23 – Marsha Lane Water Main Replacement – Meadow Court to Dixon Avenue

Description:

The existing water main on Marsh Lane from Meadow Court to Dixon Avenue is 6" diameter and serves thirty-nine (39) residences and a gas station. The main has had a number of breaks in recent years, but the primary issue with this main is that it is approximately eleven (11) feet deep in many areas, making it difficult to make repairs when needed.

It is recommended that a 6" diameter water main be constructed on Marsha Lane from Meadow Court to Dixon Avenue. The Marsha Lane Water Main Replacement project is shown on Exhibit F-23.

Cost Estimate:

The probable cost estimate for the Marsha Lane Water Main Replacement project is \$675,000 as detailed in Table 41 below.

TABLE 41
 Marsha Lane – Meadow Court to Dixon Avenue
 Water Main Replacement
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 12" Dia.	100	L.F.	\$80	\$ 8,000
Water Main, 6" Dia.	2,550	L.F.	\$65	\$165,750
Water Service Casing Pipe, 1-1/2" Dia.	100	L.F.	\$30	\$ 3,000
Water Service, 2" Dia.	30	L.F.	\$50	\$ 1,500
Water Service, 1" Dia.	1,450	L.F.	\$40	\$ 58,000
Machine Tapping Sleeve, 8"x6" w/ Gate Valve, 6" Dia.	1	Each	\$7,500	\$ 7,500
Gate Valve, 6" Dia.	7	Each	\$2,000	\$ 14,000
Fire Hydrant Complete	7	Each	\$5,500	\$ 38,500
Corp Stop and Curb Stop & Box, 2" Dia.	2	Each	\$1,200	\$ 2,400
Corp Stop and Curb Stop & Box, 1" Dia.	39	Each	\$900	\$ 35,100
Tracer Wire Access Box (Heavy Traffic)	3	Each	\$500	\$ 1,500
Tracer Wire Access Box (Light Traffic)	42	Each	\$250	\$ 10,500
Ductile Iron Fittings	1,100	LBS	\$13	\$ 14,300
Granular Select Backfill	1,240	C.Y.	\$30	\$ 37,200
Temporary Surface Over Trench	475	C.Y.	\$30	\$ 14,250
Bituminous Pavement Replacement	1,400	S.Y.	\$50	\$ 70,000
Concrete Driveway Replacement	125	S.Y.	\$80	\$ 10,000
Sidewalk Replacement	1,640	S.F.	\$12	\$ 19,680
Curb and Gutter Replacement	400	L.F.	\$60	\$ 24,000
Class 1 Seeding and Pulverized Topsoil, 4"	600	L.F.	\$10	\$ 6,000
Abandon Existing Water Mains	1	L.S.	\$8,000	\$ 8,000
Traffic Control	1	L.S.	\$5,000	\$ 5,000
Construction				\$554,180
Contingency				\$ 55,320
Design Engineering				\$ 53,000
Geotechnical				\$ 4,500
Construction Engineering				\$ 53,000
Total Project Cost				\$720,000

y. Project #24 – Keith Drive to Wiker Drive Water Main Looping

Description:

An existing 12" diameter water transmission main from the Industrial Park Water Tower extends north to the south end of Wiker Drive at Franklin Drive. Another project listed as part of this Project Plan Report addresses the continuation of the 12" line to the north to serve as a main transmission line for the northeast part of Rock Falls.

There is an existing 8" diameter water main on Keith Drive that dead ends at the south end of the street. Also, there is an existing 6" diameter water main on Marsha Lane that dead ends at the south end of the street.

It is recommended that the dead end water main be looped by constructing an 8" diameter water main from the 12" diameter water main on Wiker Drive to the west on an easement and connect to the 8" diameter water main on Keith Drive and the 6" diameter water main on Marsha Lane. The Keith Drive to Wiker Drive Water Main Looping project is shown on Exhibit F-24.

Cost Estimate:

The probable cost estimate for the Keith Drive to Wiker Drive Water Main Looping project is \$176,000 as detailed in Table 42 below.

TABLE 42
 Keith Drive to Wiker Drive
 Water Main Looping
 Project Cost Estimate

	Quantity	Unit	Unit Price	Total Cost
Watermain Quality Casing Pipe, 16" Dia.	75	L.F.	\$120	\$ 9,000
Water Main, 8" Dia.	1,050	L.F.	\$55	\$ 57,750
Water Main, 6" Dia.	230	L.F.	\$55	\$ 12,650
Machine Tapping Sleeve, 12"x8" w/ Gate Valve, 8" Dia.	1	Each	\$8,500	\$ 8,500
Gate Valve, 8" Dia.	2	Each	\$2,500	\$ 5,000
Fire Hydrant Complete	1	Each	\$5,500	\$ 5,500
Tracer Wire Access Box (Heavy Traffic)	4	Each	\$500	\$ 2,000
Ductile Iron Fittings	550	LBS	\$13	\$ 7,150
Class 2 Seeding	1,300	L.F.	\$7	\$ 9,100
Dewatering	1	L.S.	\$7,000	\$ 7,000
Tree Clearing	1	L.S.	\$8,000	\$ 8,000
Construction				\$133,150
Contingency				\$ 13,850
Design Engineering (w/ Title Search and Easement Preparation)				\$ 13,000
Geotechnical				\$ 3,000
Construction Engineering				\$ 13,000
Total Project Cost				\$176,000

z. Operation, Maintenance and Replacement Cost

The existing water rate structure and water system budget includes cost for performing water distribution operation, maintenance and replacement. The City has adequate staff to perform the necessary water distribution flushing and allocates adequate resources and funds each year for maintenance of the water distribution system when breaks or other issues occur.

aa. Design Criteria

The water system improvements will be designed in accordance with the latest edition of the Recommended Standards for Water Works and the "Standard Specifications for Water and Sewer Construction in Illinois" as published by the Illinois Society of Professional Engineers.

The water mains are designed to meet the peak hourly domestic water demands of the system and provide fire flow rates of 1,000 – 1,500 gpm in residential areas and 2,500 gpm in commercial and industrial areas while maintaining more than 20 psi in the water distribution system.

Water main valves will be located at each street intersection, so each street block can be isolated. Fire hydrants will be designed with a spacing of 350 – 400 feet. The fire hydrants will be used to perform flushing maintenance of the water distribution system and for fire protection.

The water main pipe will be polyvinyl chloride (PVC) C-900 (Eagle Loc 900 for directionally bored lines) with tracer wire for ease of locating in the future. The ductile iron fittings will be installed with a polywrap material to protect from exterior corrosion.

4. Water Treatment

The water treatment plant provides adequate iron and arsenic removal to meet water quality standards. The finished water is meeting all USEPA primary and secondary drinking water standards. The water treatment plant facility was originally constructed in 1990 with an aeration tank and two (2) 750 GPM filters. In 2001, one of the 750 GPM filters was replaced and a 1,000 GPM filter was added at the facility. The aeration tank was rehabilitated in 2018 and the facility is in very good condition and operating properly. No improvements are recommended to the water treatment facility at this time.

D. ALTERNATIVES

1. Water Supply

No water supply improvements were recommended, so no alternatives were evaluated.

2. Water Storage

No elevated water storage improvements were recommended, so no alternatives were evaluated.

3. Water Distribution System

There are no alternatives that can be evaluated for the recommended water main replacement projects. Regionalization is an alternative for evaluating water supply, water storage and water treatment improvements. The existing water main cannot be rehabilitated in place using a cured-in-place lining system because the existing water mains are not adequately sized or do not qualify for the IEPA's criteria for the conditions for cured-in-place lining to be permitted (i.e. new watermain construction is feasible and separation requirements can be met).

4. Water Treatment

No water supply improvements were recommended so no alternatives were evaluated.

E. PRESENT WORTH ANALYSIS

1. Water Supply

No water supply improvements were recommended, so no present worth analysis is required.

2. Water Storage

No water storage improvements were recommended, so no present worth analysis is required.

3. Water Distribution System

No alternative water distribution system improvements are feasible, so no present worth analysis is required.

4. Water Treatment

No water treatment improvements were recommended, so no present worth analysis is required.

SECTION IV - ENVIRONMENTAL IMPACTS

A preliminary investigation of the water main replacement and looping sites reveals that there are no sensitive environmental areas or endangered species habitats in the area.

With the exception of adverse construction impacts including noise, dust and erosion, construction will have no detrimental impacts to the environment. With regard to the adverse construction impacts, they are temporary, and provisions will be made in the plans and specifications to minimize these impacts.

A. HISTORIC/ARCHAEOLOGICAL SITES

The water main replacement and looping projects will be located on City or State right-of-way which have been previously disturbed and no historic/archaeological sites have been identified. A sign-off letter request has been submitted to the Illinois Historic Preservation Agency. The IHPA sign-off letter will be submitted to the IEPA when it has been obtained.

B. GEOLOGICAL, CULTURAL, AND RECREATIONAL AREAS

There are no known geologically or culturally sensitive areas at any of the water main replacement and looping sites.

C. FLOOD PLAIN

The proposed water main improvements are not in the 100-year flood plain. The City of Rock Falls Federal Emergency Management Agency Flood Insurance Rate Maps are included as Exhibit G.

D. STREAM CROSSINGS

There will be no stream crossings as a result of the water main improvements.

E. WETLANDS

The water main replacement and looping projects will be located on City or State right-of-way which have been previously disturbed, and no wetland areas have been identified. A sign-off letter request has been submitted to the IDNR. The IDNR sign-off letter will be submitted to the IEPA when it has been obtained. A copy of the IDNR Sign-off request is included as Exhibit H.

F. WILD AND SCENIC RIVERS

There are no designated Wild and Scenic Rivers in or around the water main improvement sites.

G. CONVERSION OF PRIME AGRICULTURAL LAND

Prime agricultural land will not be converted as a direct result of the water main improvements.

H. AIR QUALITY IMPACTS

Dust and equipment exhausts are the only air quality side effects of the water system improvement construction. Efficient equipment utilization will minimize exhaust effects, and the plans and specifications will contain provisions to control dust.

I. LAND - EROSION

Soil erosion during the construction of the water main improvements is a recognized adverse side effect. The plans and specifications will contain positive soil erosion control measures to ensure that eroded material is captured and returned to the construction site.

J. RARE/ENDANGERED PLANTS AND ANIMALS

Rare/endangered plants and animals have not been identified at any of the water main improvement sites. A sign-off letter request has been submitted to the IDNR. The IDNR sign-off letter will be submitted to the IEPA when it has been obtained. A copy of the IDNR Sign-off request is included as Exhibit H.

K. RECREATIONAL OPEN SPACE

There are no known recreational open space areas at any of the water main replacement and looping sites.

SECTION V - PROJECT COST SUMMARY

A. CAPITAL INVESTMENT COST

The total estimated Construction, Engineering and Contingency cost for the recommended water system improvements is summarized in Table 43 below.

TABLE 43
Water System Improvements
Probable Cost Estimate

Construction	\$7,303,870
Contingency	\$ 728,130
Design Engineering/Easement Preparation	\$ 692,000
Geotechnical	\$ 82,000
Construction Engineering	\$ 664,000
Total Project Cost	\$9,470,000

B. OPERATION, MAINTENANCE, AND REPLACEMENT COST

The existing water rate structure and water system budget includes costs for performing water distribution operation, maintenance and replacement. The City has adequate staff to perform the necessary water distribution flushing and allocates adequate resources and funds each year for maintenance of the water distribution system when breaks or other issues occur.

SECTION VI - PROJECT FINANCING

A. GENERAL

Even though there are several financing options available to the City, we recommend an IEPA Revolving Fund Loan as the best financing option for this project.

Local government entities such as cities, villages, water districts and certain classes of privately owned community water supplies are eligible to receive a revolving fund loan for the following types of projects.

1. Upgrade or replacement of existing facilities to bring them into compliance with the requirements of the Safe Drinking Water Act and the State Environmental Protection Agency.
2. Construction of a new distribution and treatment system to replace individual wells.
3. Renovation of treatment and/or distribution facilities that have reached the end of their useful life or have inadequate capacity to meet service area needs.

The Federal program requirements specifically prohibit funding for projects primarily for future growth and fire protection.

The water system improvements will be constructed in five (5) phases. The project location and cost included in each Phase is summarized below.

Phase 1

Project #1

3rd Avenue Water Main Replacement – 1st Avenue to W. 2nd Street

W. 6th Street Water Main Replacement/Looping – 4th Avenue to 3rd Avenue

W. 3rd Street Water Main Replacement/Looping – 3rd Avenue to 2nd Avenue

Project #2 – 2nd Avenue Water Main Replacement/Looping – 1st Avenue to W. 5th Street

Project #3 – Hudson Drive Water Main Replacement/Looping – 5th Avenue to W. 10th Street

Project #4 – W. 13th Street Water Main Replacement/Looping – 5th Avenue to 1st Avenue

Project #5 – 6th Avenue Water Main Replacement – W. 14th Street to W. 13th Street

Phase 2

Project #6

7th Avenue Water Main Replacement/Looping – W. 12th Street to W. 10th Street

8th Avenue Water Main Replacement – U.S. Route 30 to W. 10th Street

W. 10th Street Water Main Replacement – 8th Avenue to 5th Avenue

Project #7 – Flock Avenue Water Main Replacement – Roberts Street to U.S. Route 30

Project #8 – W. 14th Street Water Main Replacement – 13th Avenue to 12th Avenue

Phase 3

Project #9 – W. 18th Street, 12th Avenue, and W. 17th Street Water Main Replacement – East of 13th Avenue

Project #10 – 13th Avenue, W. 20th Street, and 11th Avenue Water Main Replacement – North of W. 21st Street

Project #11 – Bennett Drive Water Main Replacement/Looping – 14th Avenue to U.S. Route 30

Project #12 – 10th Avenue Water Main Replacement – W. 10th Street to W. 7th Street

Project #13 – 7th Avenue Water Main Replacement – W. 6th Street to South of W. 7th Street

Phase 4

Project #14 – W. 8th Street Water Main Replacement – 6th Avenue to 5th Avenue

Project #15 – Stanley Court to Garden Circle Water Main Extension/Looping

Project #16 – E. 13th Street & Avenue C Water Main Replacement/Looping – Mary Avenue to E. 11th Street

Project #17 – Burlington Terrace and E. 6th Street – E. 5th Street to Avenue C Water Main Replacement/Looping

Project #18 – Smith Court and Goodell Court Water Main Replacement/Looping

Project #19 – Avenue C Water Main Replacement – Dixon Avenue to E. 4th Street

Project #20 – Avenue E Water Main Replacement – E. 7th Street to E. 6th Street

Phase 5

Project #21 – Circle Drive to Martin Road Water Main Replacement – North of Dixon Avenue

Project #22 – Wiker Drive Water Main Replacement – Franklin Drive to Dixon Avenue

Project #23 – Marsha Lane Water Main Replacement – Meadow Court to Dixon Avenue

Project #24 – Keith Drive to Wiker Drive Water Main Looping

The project cost summary for each phase is detailed in the tables below.

TABLE 44
 Phase 1 Project Cost Summary

Item	Project Costs
Construction	\$1,539,975
Contingency	\$ 153,025
Project Planning	\$ 19,000
Engineering Design/Geotechnical	\$ 154,000
Engineering Construction	\$ 127,000
IEPA Loan Application	\$ 10,000
Interest During Construction	\$ 29,000
Total Cost	\$2,032,000

TABLE 45
 Phase 2 Project Cost Summary

Item	Project Costs
Construction	\$1,502,525
Contingency	\$ 150,475
Engineering Design/Geotechnical	\$ 154,000
Engineering Construction	\$ 139,000
IEPA Loan Application	\$ 7,000
Interest During Construction	\$ 29,000
Total Cost	\$1,982,000

TABLE 46
 Phase 3 Project Cost Summary

Item	Project Costs
Construction	\$1,628,965
Contingency	\$ 162,035
Engineering Design/Geotechnical	\$ 175,500
Engineering Construction	\$ 153,500
IEPA Loan Application	\$ 7,000
Interest During Construction	\$ 32,000
Total Cost	\$2,159,000

TABLE 47
Phase 4 Project Cost Summary

Item	Project Costs
Construction	\$1,170,455
Contingency	\$ 116,545
Engineering Design/Geotechnical	\$ 132,500
Engineering Construction	\$ 105,500
IEPA Loan Application	\$ 7,000
Interest During Construction	\$ 23,000
Total Cost	\$1,555,000

TABLE 48
Phase 5 Project Cost Summary

Item	Project Costs
Construction	\$1,461,950
Contingency	\$ 146,050
Engineering Design/Geotechnical	\$ 158,000
Engineering Construction	\$ 139,000
IEPA Loan Application	\$ 7,000
Interest During Construction	\$ 29,000
Total Cost	\$1,941,000

B. COST TO USERS

1. Existing Users, Rates and Charges

The existing water system has 4,155 customers as detailed in the Table 49 below along with the billable water volume for FY 2017 and FY 2018:

TABLE 49
Number of Customers and Billable Volume

Customer Class	# of Customers	Annual Billable Volume (Gallons)	
		FY 2017	FY 2018
Residential	3,779	162,639,222	160,523,731
Commercial	340	35,226,517	36,186,265
Industrial	20	1,297,122	1,143,023
Municipal	16	5,305,933	5,064,312
Totals	4,155	204,468,794	202,917,331

The City’s water rate schedule of charges is summarized in Table 50 below. The City has built into their rate structure an automatic 4.5% increase in the basic user charge annually through 2020.

TABLE 50
 Water Division Rate Schedule

Charge	Rate
Basic User Charge (First 300 C.F./Month)	\$10.80/User/Month
Debt Service Charge	\$4.85/User/Month
Capital Improvement Charge	\$3.50/User/Month
Basic User Rate (Over First 300 C.F.)	\$4.40/100 C.F.

The average residential user in Rock Falls uses 476.3 C.F. (3,563 gallons) of water per month. The charge for an average residential user using 476.3 C.F. of water per month is currently \$26.91 as calculated Table 51 below.

TABLE 51
 Monthly Residential Water Bill

Charge	
Basic User Charge (First 300 C.F./Month)	\$10.80
Debt Service Charge	\$ 4.85
Capital Improvement Charge	\$ 3.50
Excess Usage Charge	\$ 7.76
Total Monthly Charge	\$26.91

2. Debt Service Cost

The City of Rock Falls’ population is 8,814 based on the American Community Survey 2018 population estimates and the median household income is \$44,848 based on the American Community Survey 5 year average from 2013 – 2017. The City population and median household income is used to determine the loan and principal forgiveness the City would be eligible for through the Public Water Supply (PWS) Loan program.

Based on the FY2019 PWS Loan program Intended Use Plan, the City would be eligible for the Small Community Rate which is 75% of the Base 20 Year Rate. The Base 20 Year Rate is 1.84%. The City would also be eligible for a loan repayment period up to 30 years. Lastly, the City would be eligible for principal forgiveness in the amount of 75% of the loan amount up to a maximum of \$1,500,000. The principal forgiveness was significantly increased from the FY2018 program. The FY2018 PWS Loan program principal forgiveness was 50% of the loan amount up to a maximum of \$500,000. The PWS Loan program interest and principal forgiveness terms change every July 1st. The City will receive the loan terms during the fiscal year they receive the loan from the IEPA, which will occur after the Project Plan report is approved and the City has completed the design, permitting and bidding.

The debt service calculations below assume using the Small Community Rate and a 20 year loan and the anticipated principal forgiveness.

Phase 1

The estimated annual debt for the Phase 1 water system improvements will be \$30,700 per year in the form of a \$2,032,000 IEPA Revolving Fund loan as calculated below.

Number of Water Users: 4,155
Billable Volume: 203,700,000 gallons
IEPA Loan Terms: 20 Year Loan @ 1.38% interest
IEPA Principal Forgiveness: 75% of loan up to maximum of \$1,500,000
IEPA Annual Principal/Interest Payment: $(\$2,032,000 - \$1,500,000) \times 0.057559 = \$30,700/\text{year}$
User Charge Modification:
Debt Service Charge: $\$30,700/\text{Yr} \div 4,155 \text{ Users} \div 12 \text{ Mo/Yr} = \$0.62/\text{User/Month}$

Phase 2

The estimated annual debt for the Phase 2 water system improvements will be \$28,600 per year in the form of a \$1,982,000 IEPA Revolving Fund loan as calculated below.

Number of Water Users: 4,155
Billable Volume: 203,700,000 gallons
IEPA Loan Terms: 20 Year Loan @ 1.38% interest
IEPA Principal Forgiveness: 75% of loan up to maximum of \$1,500,000
IEPA Annual Principal/Interest Payment: $\$1,982,000 \times 0.25 \times 0.057559 = \$28,600/\text{year}$
User Charge Modification:
Debt Service Charge: $\$28,600/\text{Yr} \div 4,155 \text{ Users} \div 12 \text{ Mo/Yr} = \$0.58/\text{User/Month}$

Phase 3

The estimated annual debt for the Phase 3 water system improvements will be \$38,000 per year in the form of a \$2,159,000 IEPA Revolving Fund loan as calculated below.

Number of Water Users: 4,155
Billable Volume: 203,700,000 gallons
IEPA Loan Terms: 20 Year Loan @ 1.38% interest
IEPA Principal Forgiveness: 75% of loan up to maximum of \$1,500,000
IEPA Annual Principal/Interest Payment: $(\$2,159,000 - \$1,500,000) \times 0.057559 = \$38,000/\text{year}$
User Charge Modification:
Debt Service Charge: $\$38,000/\text{Yr} \div 4,155 \text{ Users} \div 12 \text{ Mo/Yr} = \$0.77/\text{User/Month}$

Phase 4

The estimated annual debt for the Phase 4 water system improvements will be \$22,400 per year in the form of a \$1,555,000 IEPA Revolving Fund loan as calculated below.

Number of Water Users: 4,155

Billable Volume: 203,700,000 gallons
 IEPA Loan Terms: 20 Year Loan @ 1.38% interest
 IEPA Principal Forgiveness: 75% of loan up to maximum of \$1,500,000
 IEPA Annual Principal/Interest Payment: $\$1,555,000 \times 0.25 \times 0.057559 = \$22,400/\text{year}$
 User Charge Modification:
 Debt Service Charge: $\$22,400 \div 4,155 \text{ Users} \div 12 \text{ Mo/Yr} = \$0.45/\text{User/Month}$

Phase 5

The projected annual debt for the Phase 5 water system improvements will be \$28,000 per year in the form of a \$1,941,000 IEPA Revolving Fund loan as calculated below.

Number of Water Users: 4,155
 Billable Volume: 203,700,000 gallons
 IEPA Loan Terms: 20 Year Loan @ 1.38% interest
 IEPA Principal Forgiveness: 75% of loan up to maximum of \$1,500,000
 IEPA Annual Principal/Interest Payment: $\$1,941,000 \times 0.25 \times 0.057559 = \$28,000/\text{year}$
 User Charge Modification:
 Debt Service Charge: $\$28,000/\text{Yr} \div 4,155 \text{ Users} \div 12 \text{ Mo/Yr} = \$0.57/\text{User/Month}$

The annual debt service expense for each Phase is summarized in Table 52 below.

TABLE 52
Annual Debt Service Expense Summary

Phase	Annual Debt Service Expense
1	\$ 30,700
2	\$ 28,600
3	\$ 38,000
4	\$ 22,400
5	\$ 28,000
Total	\$147,700

3. O, M & R Cost

The City's water system budget has adequate funding for the operation, maintenance and replacement of the water distribution system, so there is no additional O, M & R cost associated with the water main improvements recommended in this report.

4. Water Department Budget

The Water Department's past 3 years of expenses and revenues and the next 5 years of projected expenses and revenues are detailed on Exhibit J and the 5-year projected expenses and revenues are summarized in Table 53 below. The 5-year projections show that no rate increase is required at this time. If the IEPA Revolving Fund Loan Program significantly changes, water rate increases

may be required for certain phases, but the City will analyze expenses and revenues at that time to determine if they will be required.

TABLE 53
Water Department Projected Expenses and Revenues

	FY2019/20	FY2020/21	FY2021/22	FY2022/23	FY2023/24
Expenses					
Operation and Maintenance	\$1,223,309	\$1,259,147	\$1,296,194	\$1,334,494	\$1,374,095
Capital Improvements	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000
Debt Service	\$ 254,637	\$ 240,062	\$ 269,112	\$ 296,062	\$ 229,838
Total Expenses	\$1,677,946	\$1,699,210	\$1,765,306	\$1,830,556	\$1,803,933
Revenues					
Water Sales	\$1,648,500	\$1,725,000	\$1,803,000	\$1,803,000	\$1,803,000
Other	\$ 41,000	\$ 41,000	\$ 41,000	\$ 41,000	\$ 41,000
Total Revenue	\$1,689,500	\$1,766,000	\$1,844,000	\$1,844,000	\$1,844,000
Net Income/(Loss)	\$ 11,554	\$ 66,790	\$ 78,694	\$ 13,444	\$ 40,067

5. Cost Impact to Users

The repayment of the IEPA PWSRF loan and the O, M & R expenses of the water system will be paid with revenues of the water system. The Existing User Charge and O, M & R Certification Sheet is included with the submittal of the Project Plan.

The City's water rate schedule of charges for the next five (5) years with the automatic 4.5% increase through 2022 is summarized in Tables 54 and 55 below.

TABLE 54
Water Division Rate Schedule

Charge	FY2018/19	FY2019/20	FY2020/21
Basic User Charge (First 300 C.F./Mo.)	\$10.00/User/Mo.	\$10.80/User/Mo.	\$11.65/User/Mo.
Debt Service Charge	\$4.85/User/Mo.	\$4.85/User/Mo.	\$4.85/User/Mo.
Capital Improvement Charge	\$3.50/User/Mo.	\$3.50/User/Mo.	\$3.50/User/Mo.
Basic User Rate (Over 300 C.F.)	\$4.20/100 C.F.	\$4.40/100 C.F.	\$4.60/100 C.F.

TABLE 55
 Water Division Rate Schedule

Charge	FY2021/22	FY2022/23	FY2023/24
Basic User Charge (First 300 C.F./Mo.)	\$12.55/User/Mo.	\$12.55/User/Mo.	\$12.55/User/Mo.
Debt Service Charge	\$4.85/User/Mo.	\$4.85/User/Mo.	\$4.85/User/Mo.
Capital Improvement Charge	\$3.50/User/Mo.	\$3.50/User/Mo.	\$3.50/User/Mo.
Basic User Rate (Over 300 C.F.)	\$4.80/100 C.F.	\$4.80/100 C.F.	\$4.80/100 C.F.

The cost impact to an average residential user using 476.3 C.F. (3,563 gallons) of water per month for the next 5 fiscal years, based on the 4.5% water rate increase is summarized in Table 56 below.

TABLE 56
 Monthly Residential Water Bill Increase

	Monthly Bill		
	User Charge Increase	User Rate Increase	Total
FY2018/19	\$0.00	\$7.40	\$25.75
Phase 1 – FY2019/20	\$0.80	\$7.76	\$26.91
Phase 2 – FY2020/21	\$0.85	\$8.11	\$27.31
Phase 3 – FY2021/22	\$0.90	\$8.46	\$27.71
Phase 4 – FY2022/23	\$0.00	\$8.46	\$27.71
Phase 5 – FY2023/24	\$0.00	\$8.46	\$27.71

SECTION VII - IMPLEMENTATION

To implement a program in which the water treatment plant improvements will be constructed with IEPA, Public Water Supply Revolving Fund Loan financing, the City should take the following actions in the schedule provided below for each phase of the project:

TABLE 57
 Phase 1 Project Schedule

EVENT	DATE
Submit Project Plan and Pre-Application Form to IEPA	June 24, 2019
Complete Design Phase	November 1, 2019
Develop and Adopt Ordinance Authorizing the City to Borrow Funds from the IEPA PWS Loan Program For All 5 Phases	October 1, 2019
Receive IEPA Construction Permit	February 1, 2020
Obtain IEPA Approval of Project Plan Report	March 1, 2020
Submit IEPA Loan Application Documents	April 1, 2020
Advertise For Bids	February 1, 2020
Bid Opening	March 17, 2020
Bid Award	April 7, 2020
Obtain IEPA Loan Agreement	May 22, 2020
Construction – Start	June 1, 2020
Construction – Completion	June 1, 2021

TABLE 58
 Phase 2 Project Schedule

EVENT	DATE
Complete Design Phase	June 1, 2020
Submit IEPA Loan Application Documents	August 1, 2020
Receive IEPA Construction Permit	September 1, 2020
Advertise For Bids	October 15, 2020
Bid Opening	December 1, 2020
Bid Award	December 7, 2020
Obtain IEPA Loan Agreement	February 1, 2021
Construction – Start	April 1, 2021
Construction – Completion	December 1, 2021

TABLE 59
Phase 3 Project Schedule

EVENT	DATE
Complete Design Phase	July 1, 2021
Submit IEPA Loan Application Documents	August 1, 2021
Receive IEPA Construction Permit	October 1, 2021
Advertise For Bids	October 15, 2021
Bid Opening	December 1, 2021
Bid Award	December 6, 2021
Obtain IEPA Loan Agreement	February 1, 2022
Construction – Start	April 1, 2022
Construction – Completion	December 1, 2022

TABLE 60
Phase 4 Project Schedule

EVENT	DATE
Complete Design Phase	July 1, 2022
Submit IEPA Loan Application Documents	August 1, 2022
Receive IEPA Construction Permit	October 1, 2022
Advertise For Bids	October 12, 2022
Bid Opening	November 29, 2022
Bid Award	December 5, 2022
Obtain IEPA Loan Agreement	February 1, 2023
Construction – Start	April 1, 2023
Construction – Completion	December 1, 2023

TABLE 61
Phase 5 Project Schedule

EVENT	DATE
Complete Design Phase	July 1, 2023
Submit IEPA Loan Application Documents	August 1, 2023
Receive IEPA Construction Permit	October 1, 2023
Advertise For Bids	October 12, 2023
Bid Opening	November 29, 2023
Bid Award	December 4, 2023
Obtain IEPA Loan Agreement	February 1, 2024
Construction – Start	April 1, 2024
Construction – Completion	December 1, 2024

Exhibit A

IEPA Water System Inspection Report



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

BRUCE RAUNER, GOVERNOR

LISA BONNETT, DIRECTOR

ROCK FALLS - Whiteside County
Facility Number: 1950450

May 20, 2016

William Wescott, Mayor
City of Rock Falls
603 West 10th Street
Rock Falls, IL 61071

Dear Mayor Wescott:

An engineering evaluation of the Rock Falls community water supply has been completed. A field inspection was performed Gene Forster on April 15, 2016. Mr. Ted Padilla, Certified Operator, was present.

The Environmental Protection Agency periodically conducts engineering evaluations to determine if your community water supply meets the requirements of the Illinois Pollution Control Board public water supply rules, regulations, and related standards. Based on our current evaluation, your water supply is in general compliance with regulatory requirements.

Please review Attachment B. This attachment presents reminders and recommended improvements.

We appreciate the cooperation and courtesy extended to us during this survey. Please contact Mr Foster at this office if you have questions regarding this evaluation. Our office is located at 4302 North Main Street, Rockford, Illinois; phone 815/987-7760.

Sincerely,

ENVIRONMENTAL PROTECTION AGENCY

A handwritten signature in black ink, appearing to read "Brett D. Hanson".

Brett D. Hanson
Regional Manager - Field Operations Section
Bureau of Water
Division of Public Water Supplies

BDH:GF

cc: Ted Padilla, Certified Operator
Illinois State Water Survey

ATTACHMENT B

ROCK FALLS - Whiteside Co.

Inspection Date: April 15, 2016

REMINDERS AND/OR RECOMMENDED IMPROVEMENTS

TECHNICAL CAPACITY

The following recommendation is made to enhance the technical capacity of the system.

Distribution

1. Some of the watermains are undersized. As a result, the system may not be able to maintain the minimum required pressure of 20 pounds per square inch (psi). The minimum allowable watermain size is four inches in diameter. The minimum allowable watermain for fire flow is six inches in diameter. If minimum pressure cannot be maintained or if the undersized mains require extensive repairs, installation of adequately sized watermains is required. A construction permit must be acquired from this Agency prior to replacing undersized watermains. As a reminder, service lines must be individual and must directly connect to adjacent watermains without crossing property lines. (The Act, Sections 15 and 18; 35 IAC Part 602, 652.101, 653.117, and 653.203; and the Standards 8.1.1)

FINANCIAL CAPACITY

The following recommendation is made to enhance the financial capacity of the system.

Unaccounted Water

2. The average daily pumpage is relatively high for the population served and the amount of unaccounted water exceeds 15%. A thorough check of the distribution system is recommended for leaks. The accountability and financial condition of the water system would be enhanced by a review of billing procedures. Additionally, consumer water meters should be repaired or replaced if found to be defective or inaccurate. Meters should be replaced at a 10 year or more frequent interval.

FY 2016

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
 DIVISION OF PUBLIC WATER SUPPLIES
 PUBLIC WATER SUPPLY DATA SHEET

County & Supply Whiteside Co. - ROCK FALLS 1950450

Date Inspected April 15, 2016 Plant Phone 815/622-1106 (P.W.)
815/622-6502 (Cell)

Operator Ted Padilla, Supt., COIRC, Class *B*, Phone 815/622-1122 (Fax)
#10553, 202 Avenue B, Rock Falls, IL 61071 815/622-1120 (Plt)
 e-mail h2otap@rockfalls61071.com

Other Officials (Title) William Wescott, Mayor Phone 815/622-1106 (P.W.)
Robbin Blackert, City Administrator
 Emergency Address Police Department Phone 815/622-1140

Send Mail To Mayor, City Hall, 603 W. 10th St., Rock Falls, IL 60171

Interviewed Ted Padilla

Brief Description of Supply: Water obtained from Wells #2, #4 and #5 is
aerated, repumped, chlorinated, fluorinated, filtered for Fe and As
reduction, fluoridated then discharged to elevated storage tank and
distribution at TP01.

Class *B* Facility

No. Of Services: Direct 4200 - 100 % Metered

ADEQUACY OF SUPPLY: 2015

Production Capacity is 436 % of the average daily pumpage.
 Annual Pumpage 273,898,000* Gal. Production Capacity 3,600,000** Gal/Day
 Av. Daily Pumpage 750,400* Gal. Max. Day Pumpage 1,080,000 Gal
 Est. Population 9,600 Av. Daily per Capita Consumption 78 Gal
 Time Required to Produce Av Daily Consumption 5.0 Hrs
 Time Required to Produce Max Av Daily Consumption 7.2 Hrs
 Large Consumers Backwash approximately 125,000 gpd
 Storage Capacity Elevated 600,000 gallons
 Emergency Power Sources: 500 KVA diesel generator.

*Includes backwash water

**Total filter capacity. Well capacity is approx. 4,723,200 gpd.

WELLS AND WELLHEAD PROTECTION

Wells #2, #4 and #5 (Well ID Numbers 11917, 11919, and 00716) are the raw water sources at TP01. The well pumps produce 1280, 1000, and 1000 gpm, respectively. The well pumps automatically alternate as the lead and lag pumps.

By Special Exception Permit dated February 26, 1993, the Agency determined that Wells #2, #4, and #5 are not "Ground Water Under the Direct Influence of Surface Water."

The 5-year recharge area for the wells has been delineated. Rock Falls adopted a maximum setback zone ordinance and wellhead protection program for Wells #2, #4, and #5. The Agency previously established a minimum setback zone of 400 feet for each well.

Rock Falls is initiating an area wide aquifer protection program to include other municipal users of the Tampico/SanKoty aquifer.

Private wells exist within the City limits. City Ordinance states that all private wells within the City must be connected. All but approximately 25 services have been connected.

Production from Well #4 has been falling during this reporting period. Plans for a new well (Well #7) are underway to replace Well #4.

TREATMENT

Water from the wells discharges to the ground tank via a 2500 gpm induced draft aerator. Water is repumped to the filtration plant. TP01 is the filter plant discharge.

A gas chlorination system injects chlorine from 150-lb cylinders to the filter influent lines via booster pump lines. Separate chlorine injectors provide chlorine for each filter. The chlorine room is separate and vented. Less than 2500 lbs of gas chlorine is reported to be stored at the treatment plant at any one time.

The natural fluoride concentration is approximately 0.1 to 0.2 mg/l. Supplemental fluoridation is practiced. Hydrofluosilicic acid (23%) is added by using separate pumps taking suction from a scale-mounted carboy; then injecting to the Filter 1 and 2 discharge lines, and the Filter 3 influent line.

At 2.8 gpm/sq ft, the two-celled filters (Filters 1 and 2) each produce 750 gpm for a total of 1500 gpm. The three-celled filter (Filter 3) produces 1000 gpm.

One cell is backwashed at a time at approximately 7.5 gpm/sq ft for 15 minutes with a seven minute airwash. Filters are backwashed once per day. Backwash water discharges through an air gap to a 42-inch diameter sewer line that is approximately 1280 feet long. The sewer line acts as a holding tank before water discharges to the sanitary sewer system.

The pressure filters reduce the raw water iron concentration from approximately 4 mg/l to 0.02 mg/l. Raw water Arsenic is reduced to approximately 1.4 ug/L.

WATER STORAGE

Plant storage consists of one 72,000 gallon ground level iron and arsenic oxidation/reaction tank. The vents and overflows are screened and the hatches are locked.

Elevated water storage consists of two 300,000 gallon elevated tanks. The 0.6 MG elevated storage capacity does not meet the 0.75 MG average daily demand of the system. However, standby power is available to run the system.

PUMPS AND PUMP FACILITIES

Three 1000 gpm high service pumps transfer water from the ground tank to the pressure filters. The three pumps alternate on a lead/lag cycle. In the event of an emergency, the 1350 gpm fire pump can transfer water from the elevated tank to the distribution system.

One 500 KVA diesel generator is available to power the plant during a power outage. An autodialing alarm system alerts the operators of system malfunctions.

DISTRIBUTION

The distribution system includes watermains between 2" and 12". The operators flush the system annually. Valves are exercised annually. System maps are maintained. A GPS-based map system has been developed.

Boil order and sampling requirements were discussed during the inspection. Generally, the operators isolate small portions of the distribution system to repair watermain breaks.

A meter repair and replacement program is underway. Meters are changed or calibrated at a 5-year interval, with 120 new meters replaced annually. Unaccounted water for this period was 12%.

An inactive interconnection with the Sterling PWS has been abandoned, identified as CC02.

CROSS-CONNECTION CONTROL

The Agency approved the Rock Falls Cross-Connection Control Ordinance in 1992. Rock Falls has started a cross-connection control program. Surveys are performed to identify hazardous users. Letters are sent to users with RPZ devices regarding annual inspections. Approximately 125 RPZs are present on the system. Records are maintained at the Water Department office. The bi-annual cross-connection control survey is scheduled for June 2016.

MONITORING AND REPORTING

Certified Operator: Ted Padilla is the Certified Operator in Responsible Charge (COIRC). A current NORP form is on file with the Agency.

Operating Reports: Monthly operating reports are submitted regularly, as required. Monitoring includes daily water pumpage and tests of the finished water; including free and total chlorine, iron, and fluoride tests. Five days per week, raw and finished pH tests are performed at the plant. Free and total chlorine tests are performed from four distribution areas (A to D).

Bacteriological: TP01 identifies the existing treatment plant. Routine bacteriological sample results have been satisfactory. Coliform bacteria MCL or monitoring violations have not occurred since the previous inspection.

Rock Falls must submit a minimum of three raw (one from each active well), one finished, and ten distribution samples for each bacteriological sampling period (monthly). The sample site plan was reviewed and accurately reflects sampling points in the system. The plan was last updated in 2013.

D/DBP: TTHM and HAA5 samples collected on August 12, 2015 reported 45.8 ug/l and 16.5 ug/l, respectively. On-site chlorine residuals from the distribution system were; 1.9 mg/l free and 2.2 mg/l total (Area A), 1.5 mg/l free and 1.7 mg/l total (Area B), 1.4 mg/l free and 1.5 mg/l total (Area C), and 1.2 mg/l free and 1.4 mg/l total (Area D), respectively. Source water chlorine residual for TP01 was 1.8 mg/l free and 2.4 mg/l total.

Nitrate/Nitrite: Nitrate samples collected on May 12, 2015 reported a range of 0 to 0.143 mg/l. The nitrate/nitrite samples were within the MCL of 10 mg/l.

IOC: An IOC sample set was submitted for TP01 on January 27, 2015. Reported concentrations were within the MCLs. Sampling history includes raw water arsenic concentrations between 15 and 20 ug/l. Arsenic concentration is below the MCL (due to filtration process).

Fluoride Summary: Natural fluoride from the last IOC sample set was 0.581 mg/l. Fluoride concentrations have been primarily reported within the 0.9 to 1.2 mg/l range.

VOC: VOC samples collected from TP01 on August 11, 2015 reported no detections.

SOC: SOC samples collected from TP01 on March 28, 2011 indicated no detections.

Radiological: The Gross Alpha and Combined Radium 226/228 samples, collected on August 15, 2015 at TP01, indicated a content of 4.7 pCi/l and 0.87 pCi/l, respectively.

Lead and Copper: The samples collected in July of 2014 did not exceed the lead or copper action level. Twenty (20) lead samples were collected, with concentrations ranging from 0 to 6.91 ug/l. No samples for lead exceeded 15 ug/l.

Vulnerability Waiver: Rock Falls has been granted a Vulnerability Waiver (SEP) at TP01. The Vulnerability Waiver expires on December 31, 2016.

WATER SYSTEM MANAGEMENT/OWNERSHIP/STAFFING

William Wescott is the Mayor and Official Custodian of the water system. A current NORP form is on file with the Agency. Water staff include:
Ted Padilla - Certified Operator in Responsible Charge (COIRC)
Tony Poci - Assistant Supervisor
Ross Johnson - Sample collector
Marty Thum - Maintenance

EMERGENCY PLAN

The facility has an Emergency Management Plan.

PERMITS

Construction Permit activity reported for this period is as follows:

1. 2016-0745: 8th Ave South of US 30 Water Main - Not Completed.
2. 2016-0269: Drilling, Development, and Pump; Well #7 - Not Completed.
3. 2016-0270: Well #7 Raw Main, Well #4 Building Mod. - Not Completed.
4. 2015-0513: E 2nd Water Main Extension - Not Completed.
5. 2015-0172: E 17th Water Main Extension - Completed.
6. 2014-1220: Hilltop Drive Water Main Extension - Completed.
6. 2014-1121: 7th Avenue Water Main Extension - Completed.
6. 2014-0670: Thomas Ave Water Main Extension - Completed.

Operating Permits are in-place for the above completed permits.

WELL SUMMARY

Well#	Capacity	TP#	Well ID#	GUI-SEP	Min Setback (ft)	Well Status	Backup	Vuln Waiver
#2	1280 gpm	01	11917	Yes	400**	Active	No	Yes
#3	---- gpm	--	11918	No	400**	Abandoned	No	No
#4	1000 gpm	01	11919	Yes	400**	Active	No	Yes
#5	1000 gpm	01	00716	Yes	400**	Active	No	Yes
#6	--gpm	01						
#7	--gpm							

**SOC Waiver only

***Maximum setback zone ordinance adopted July 6, 1999

HIGH SERVICE PUMP DATA

PUMP #	CAPACITY	TP #	PUMP #	CAPACITY	TP #
#1	<u>1000</u> gpm	<u>01</u>	#3	<u>1000</u> gpm	<u>01</u>
#2	<u>1000</u> gpm	<u>01</u>	Fire Pump	<u>1350</u> gpm	<u>01</u>

PLANT CAPACITIES

Total Well Capacity	<u>4,723,200</u>	gpd	Ground Storage	<u>72,200</u>	gal
Total Storage Capacity	<u>672,000</u>	gal	Elevated Storage	<u>300,000</u>	gal
Iron Filter Capacity	<u>3,600,000</u>	gpd	Elevated Storage	<u>300,000</u>	gal
High Service Capacity	<u>4,320,000</u>	gpd			

CHANGES & IMPROVEMENTS SINCE THE LAST INSPECTION (2013):

Well #7 under development to replace Well #4.

DEFICIENCIES NOTED IN LAST INSPECTION (2013):

None.

RECOMMENDATIONS NOTED IN LAST INSPECTION (2013):

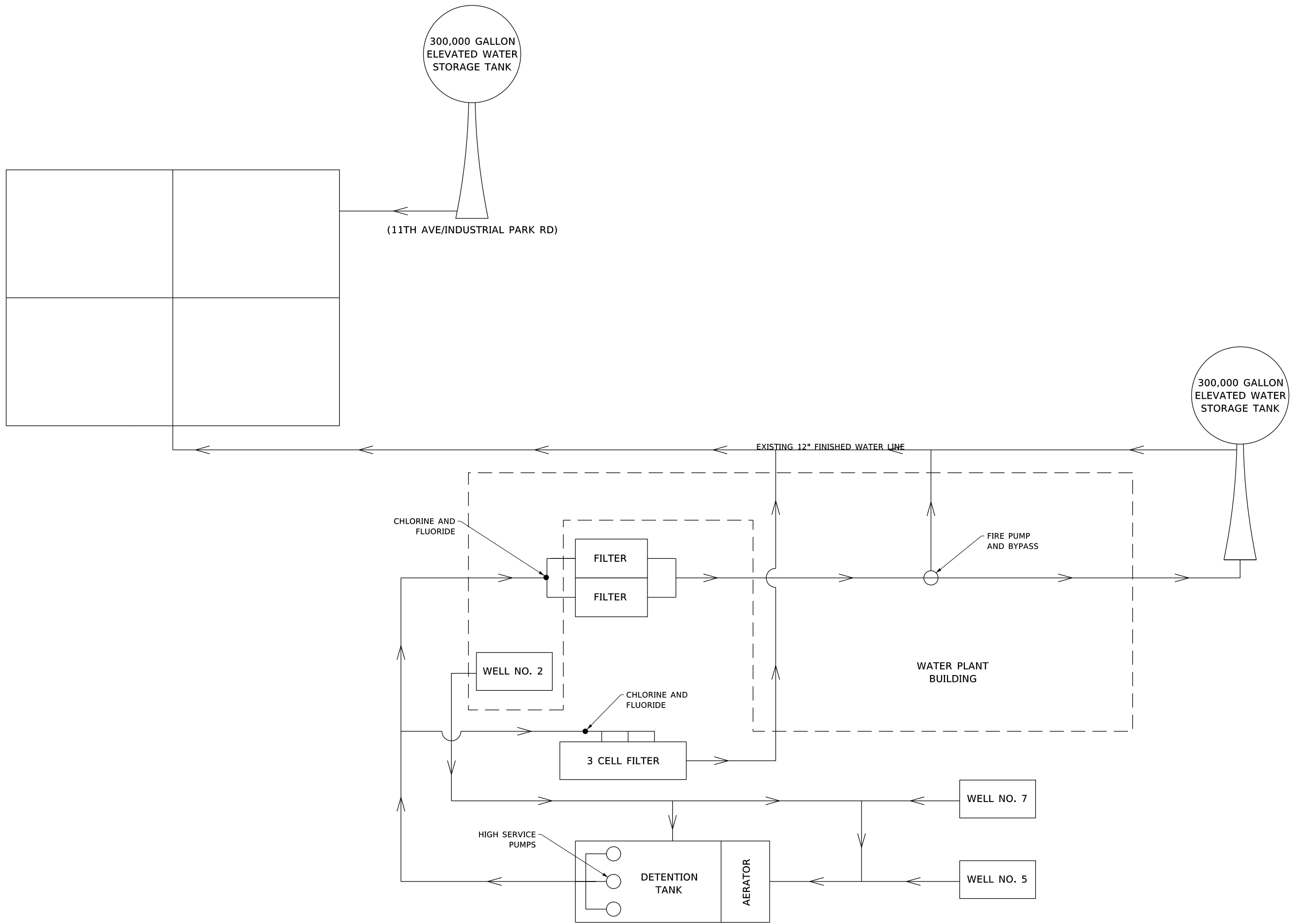
- Some of the watermains are undersized. As a result, the system may not be able to maintain the minimum required pressure of 20 pounds per square inch (psi). If minimum pressure cannot be maintained or if the undersized mains require extensive repairs, installation of adequately sized watermains is required. (The Act, Sections 15 and 18; 35 IAC Part 602, 652.101, 653.117, 653.203; and the Standards 8.1.1) - NOT CORRECTED
- The amount of unaccounted water exceeds 15%. A thorough check of the distribution system is recommended for leaks. Consumer water meters should be repaired or replaced if found to be defective or inaccurate. Meters should be replaced at a 10 year or more frequent interval. - CORRECTED

Exhibit B

Existing Water System Schematic Drawing

FILE = S:\PROJECTS\2018\1487018_RF\DESIGN\WATER-WASTEWATER\20_Drawings\PROJECT PLAN REPORT\1487018_Exhibit B_Water_System_Schematic.dgn HALFSIZE.BWplotter 6/19/2019 1:30:40 PM = PLOTTED

WATER SYSTEM DISTRIBUTION



NO SCALE

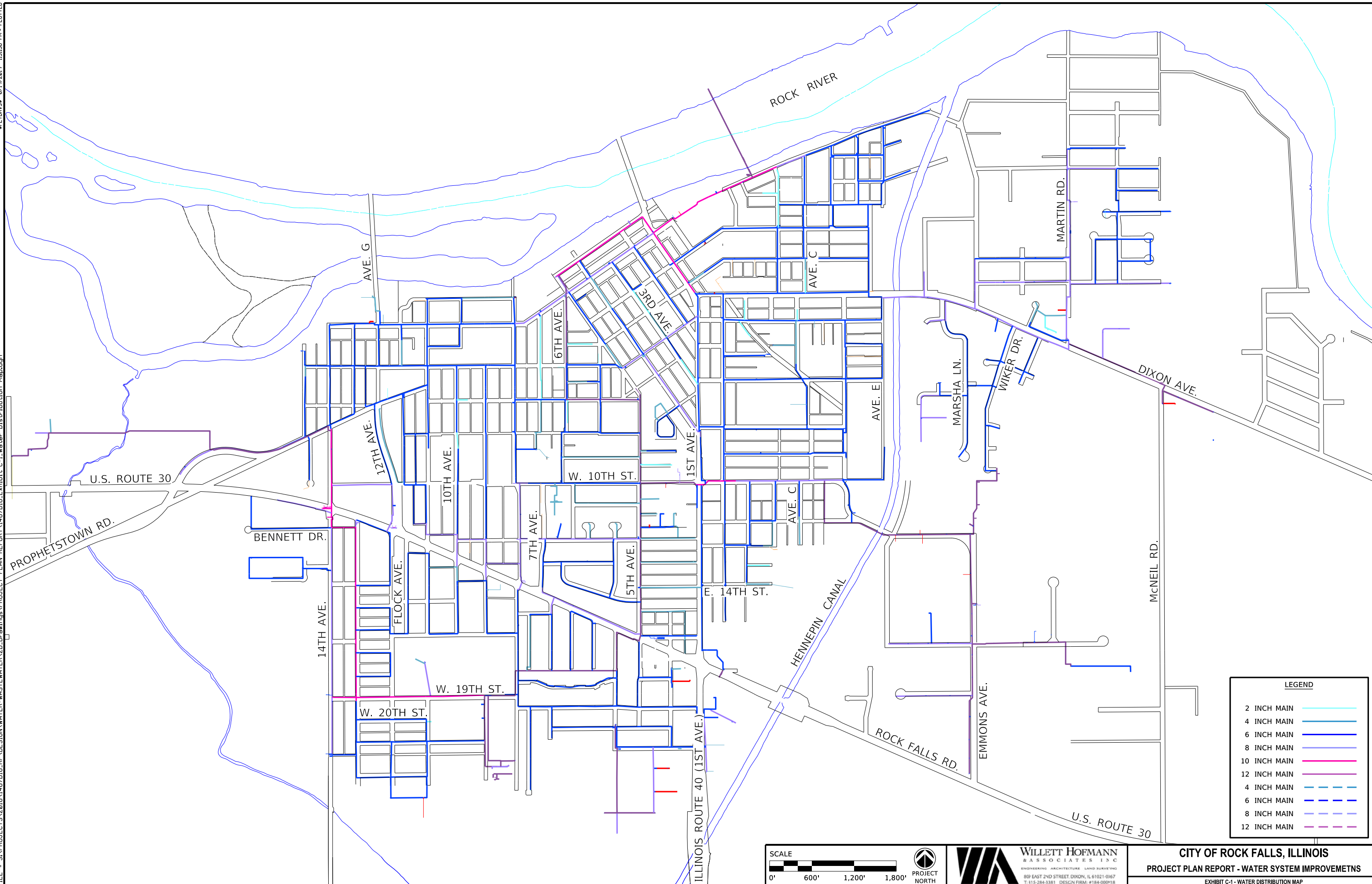


CITY OF ROCK FALLS, ILLINOIS
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
EXHIBIT B - EXISTING WATER SYSTEM SCHEMATIC DRAWING

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Exhibit C -1

Water Distribution Map



LEGEND

2 INCH MAIN	
4 INCH MAIN	
6 INCH MAIN	
8 INCH MAIN	
10 INCH MAIN	
12 INCH MAIN	
4 INCH MAIN	
6 INCH MAIN	
8 INCH MAIN	
12 INCH MAIN	



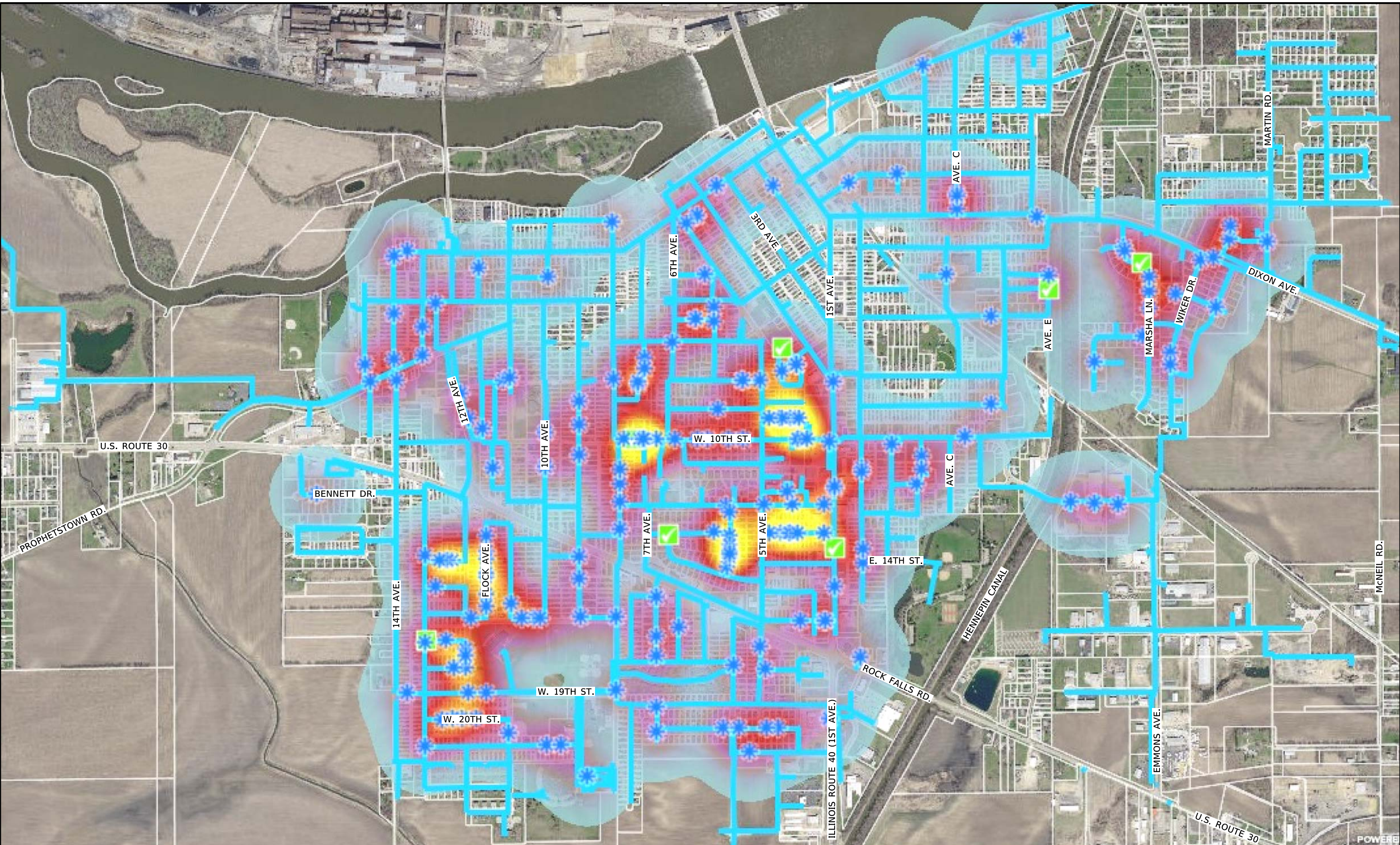
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 T: 315-284-3381 FAX: 315-284-3381

CITY OF ROCK FALLS, ILLINOIS
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT C-1 - WATER DISTRIBUTION MAP

Exhibit C-2

Water Main Breaks Hot Spots Map

FILE = S:\PROJECTS\2018\1487018_RF\DESIGN\WATER-WASTEWATER\20_Drawings\PROJECT PLAN\REPORT\1487018-Exhibit C-2-Water Main Breaks Hot Spots Map.aprx 6/19/2019 1:27:35 PM - PLOTTED



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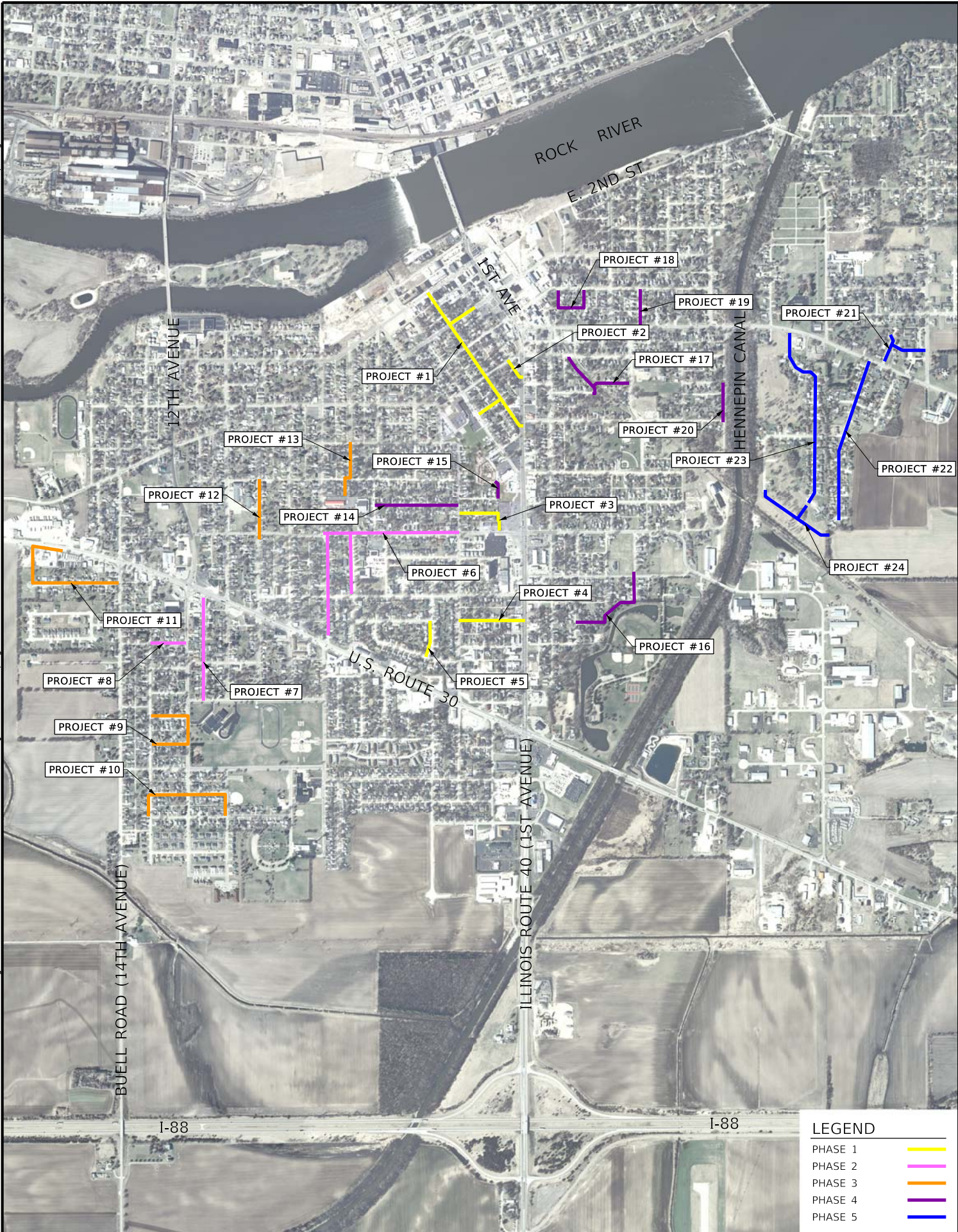
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ASSOCIATES INC
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CITY OF ROCK FALLS, ILLINOIS
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
EXHIBIT C-2 - WATER MAIN BREAKS HOT SPOTS MAP

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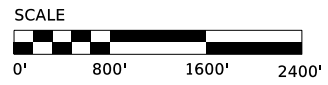
Exhibit D

Project Location Map



LEGEND

PHASE 1	
PHASE 2	
PHASE 3	
PHASE 4	
PHASE 5	



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CITY OF ROCK FALLS, ILLINOIS
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS


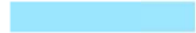
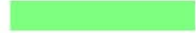
EXHIBIT D - PROJECT LOCATION MAP

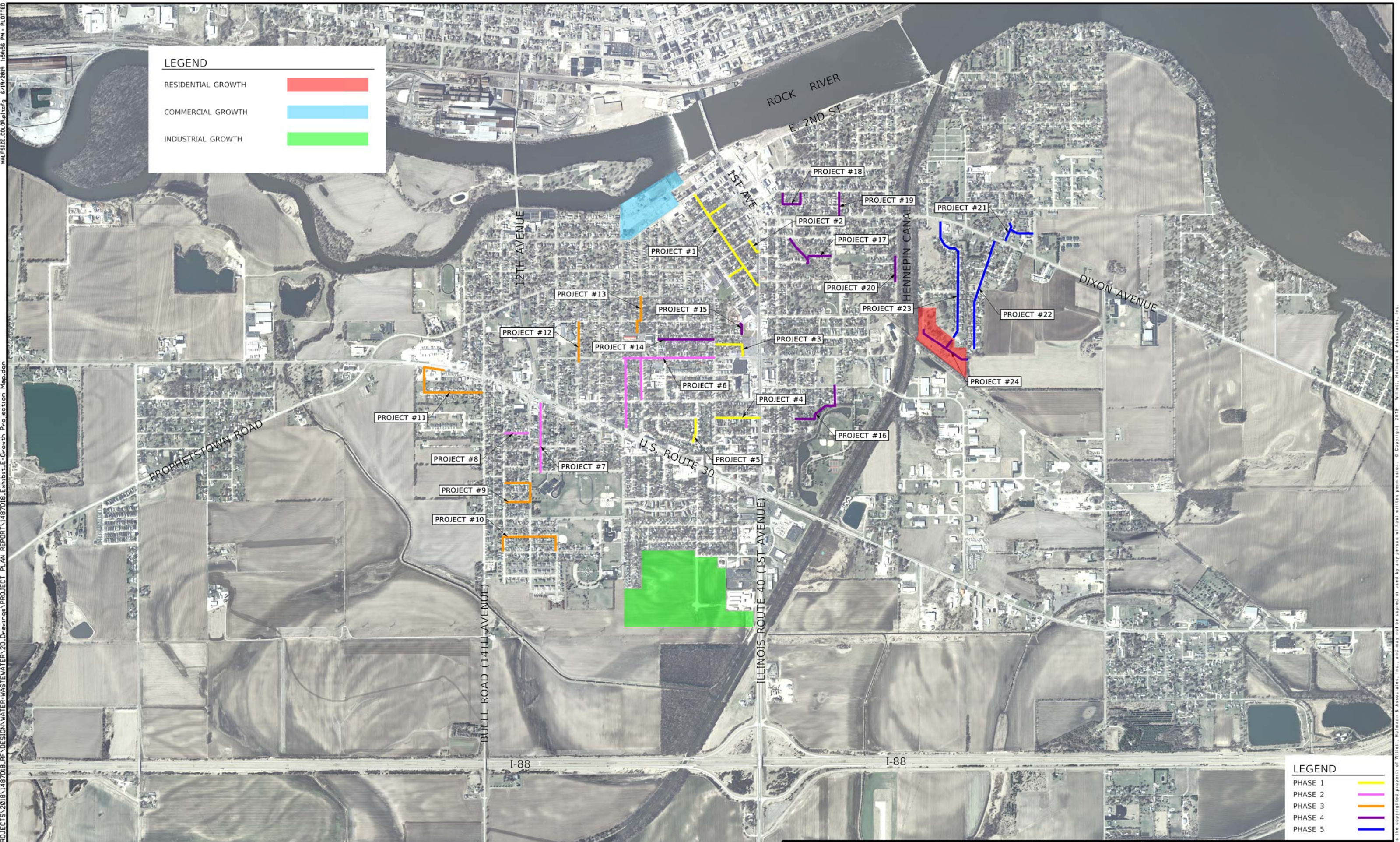
Exhibit E

Growth Projection Map






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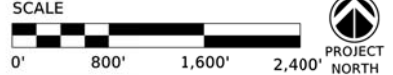
RESIDENTIAL GROWTH	
COMMERCIAL GROWTH	
INDUSTRIAL GROWTH	



LEGEND


PHASE 1	
PHASE 2	
PHASE 3	
PHASE 4	
PHASE 5	

SCALE



0' 800' 1,600' 2,400'

PROJECT NORTH



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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT E - GROWTH PROJECTION MAP

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Exhibit F-1 through F-24

**24 Water Main Replacement/Looping
Project Location Maps**



PROPOSED 6" WATERMAIN-400 L.F.

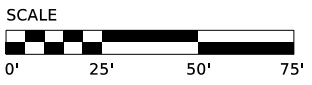
PROPOSED 6" WATERMAIN-2,150 L.F.

PROPOSED 6" WATERMAIN-350 L.F.



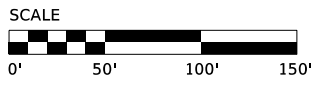
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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
EXHIBIT F-1 - 3RD AVENUE, W. 6TH STREET AND W. 3RD STREET WATER MAIN REPLACEMENT



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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-2 - 2ND AVENUE WATER MAIN REPLACEMENT/LOOPING



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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-3 - HUDSON DRIVE WATER MAIN REPLACEMENT/LOOPING



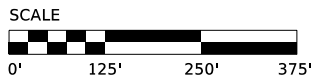
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 PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-4 - W. 13TH STREET WATER MAIN REPLACEMENT/LOOPING



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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-5 - 6TH AVENUE WATER MAIN REPLACEMENT

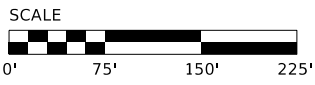


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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS

EXHIBIT F-6 - 7TH AVENUE, 8TH AVENUE AND W. 16TH STREET WATER MAIN REPLACEMENT



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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
EXHIBIT F-7 - FLOCK AVENUE WATER MAIN REPLACEMENT



12TH AVE.

EXISTING 6" WATERMAIN

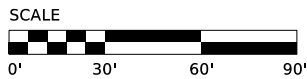
PROPOSED 6" WATERMAIN-520 L.F.

EXISTING 6" WATERMAIN

W. 14TH ST.

13TH AVE.

EXISTING 10" WATERMAIN



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 PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-8 - W. 14TH STREET WATER MAIN REPLACEMENT



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CITY OF ROCK FALLS, ILLINOIS

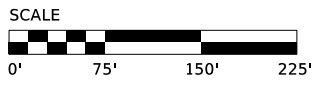
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS

EXHIBIT F-9 - W. 18TH STREET, 12TH AVENUE AND W. 17TH STREET WATER MAIN REPLACEMENT



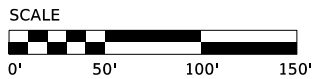
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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
EXHIBIT F-10 - 13TH AVENUE, W. 20TH STREET AND 11TH AVENUE WATER MAIN REPLACEMENT



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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
EXHIBIT F-11 - BENNETT DRIVE WATER MAIN REPLACEMENT



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 PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS

EXHIBIT F-12 - 10TH AVENUE WATER MAIN REPLACEMENT



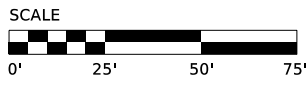
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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
EXHIBIT F-13 - 7TH AVENUE WATER MAIN REPLACEMENT



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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-14 - W. 8TH STREET WATER MAIN REPLACEMENT



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PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
EXHIBIT F-15 - STANLEY COURT TO GARDEN CIRCLE WATER MAIN EXTENSION



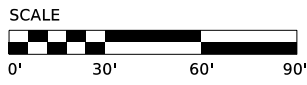


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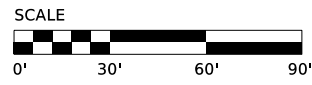
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS

EXHIBIT F-17 - BURLINGTON TERRACE AND E. 6TH STREET WATER MAIN REPLACEMENT



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CITY OF ROCK FALLS, ILLINOIS
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-18 - SMITH COURT AND GOODELL COURT WATER MAIN REPLACEMENT



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 PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-19 - AVENUE C WATER MAIN REPLACEMENT



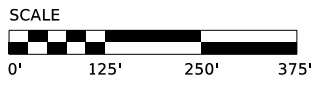
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CITY OF ROCK FALLS, ILLINOIS
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-20 - AVENUE E WATER MAIN REPLACEMENT



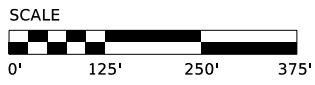
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CITY OF ROCK FALLS, ILLINOIS
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-21 - CIRCLE DRIVE TO MARTIN ROAD WATER MAIN REPLACEMENT



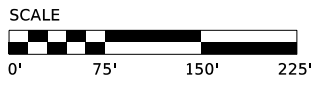
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CITY OF ROCK FALLS, ILLINOIS
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-22 - WIKER DRIVE WATER MAIN REPLACEMENT



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CITY OF ROCK FALLS, ILLINOIS
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-23 - MARSHA LANE WATER MAIN REPLACEMENT

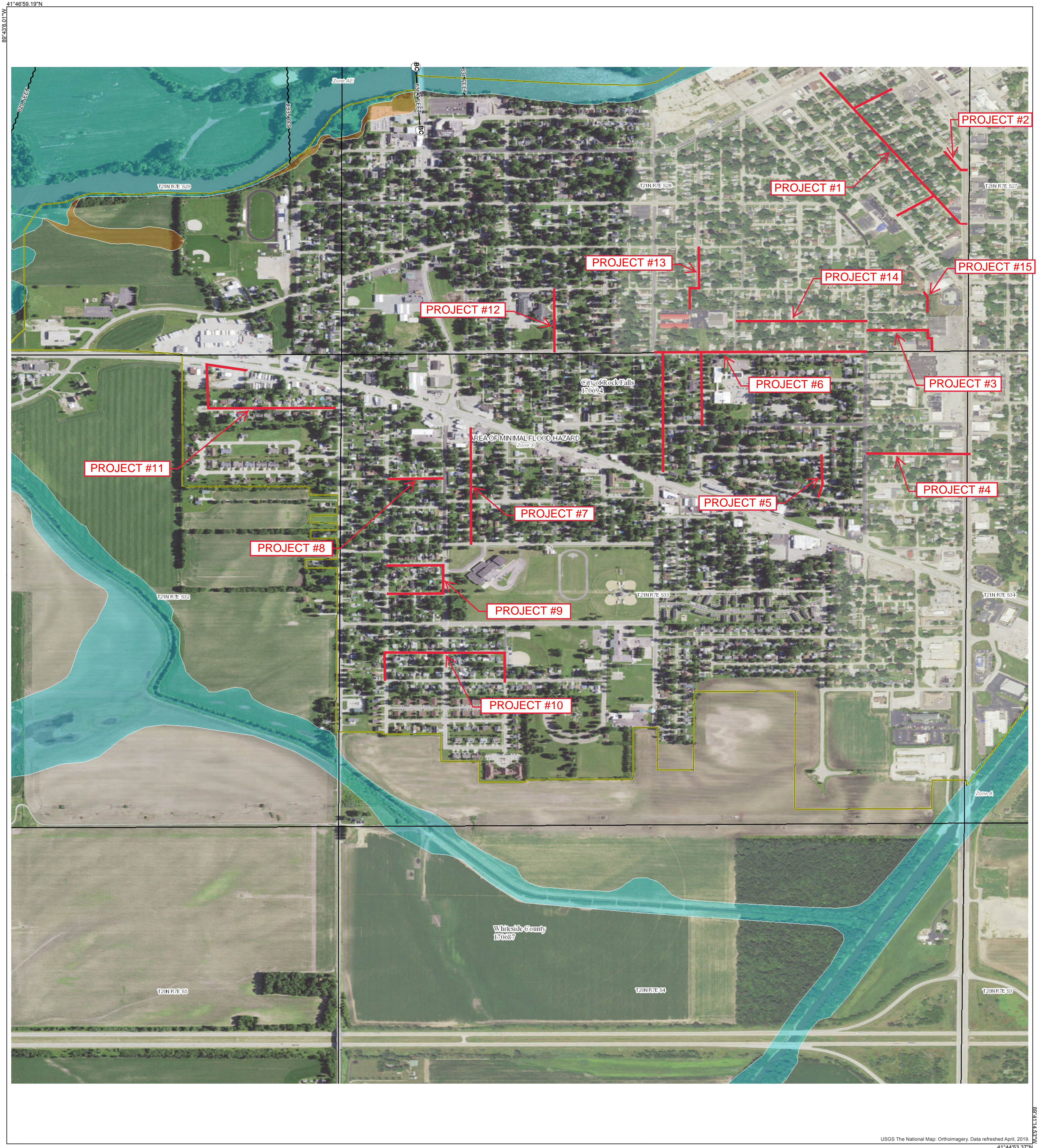


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 ENGINEERING ARCHITECTURE LAND SURVEYING
 809 EAST 2ND STREET, DIXON, IL 61021-0367
 T: 815-284-3381 DESIGN FIRM: #184-000918

CITY OF ROCK FALLS, ILLINOIS
PROJECT PLAN REPORT - WATER SYSTEM IMPROVEMENTS
 EXHIBIT F-24 - KEITH DRIVE TO WIKER DRIVE WATER MAIN LOOP

Exhibit G

FEMA Maps (2)



USGS The National Map: Orthimagery, Data refreshed April, 2019. 41°44'53.37"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, V, A99
	With BFE or Depth Zone AE, AO, AH, VE, AR
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	Future Conditions 1% Annual Chance Flood Hazard Zone X
	Area with Reduced Flood Risk due to Levee See Notes, Zone X
	Area with Flood Risk due to Levee Zone D
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard Zone X
	Effective LOMRs
	Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
	20.2 Cross Sections with 1% Annual Chance
	17.5 Water Surface Elevation
	Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
OTHER FEATURES	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

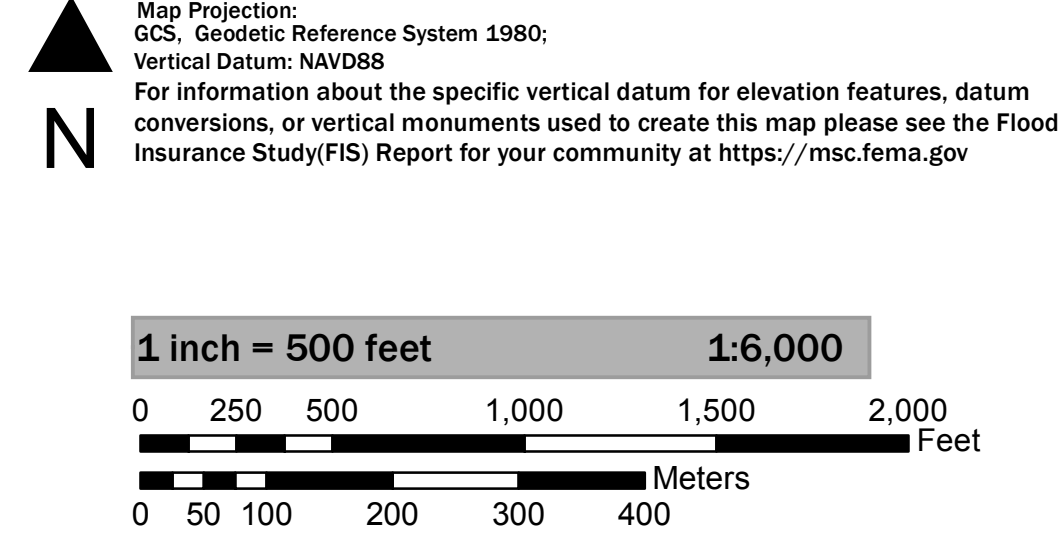
Basemap information shown on this FIRM was provided in digital format by USDA, Farm Service Agency (FSA). This information was derived from NAIP, dated April 11, 2018.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 6/5/2019 3:50:38 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at <https://www.fema.gov/media-library/assets/documents/118418>.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE



FEMA
National Flood Insurance Program

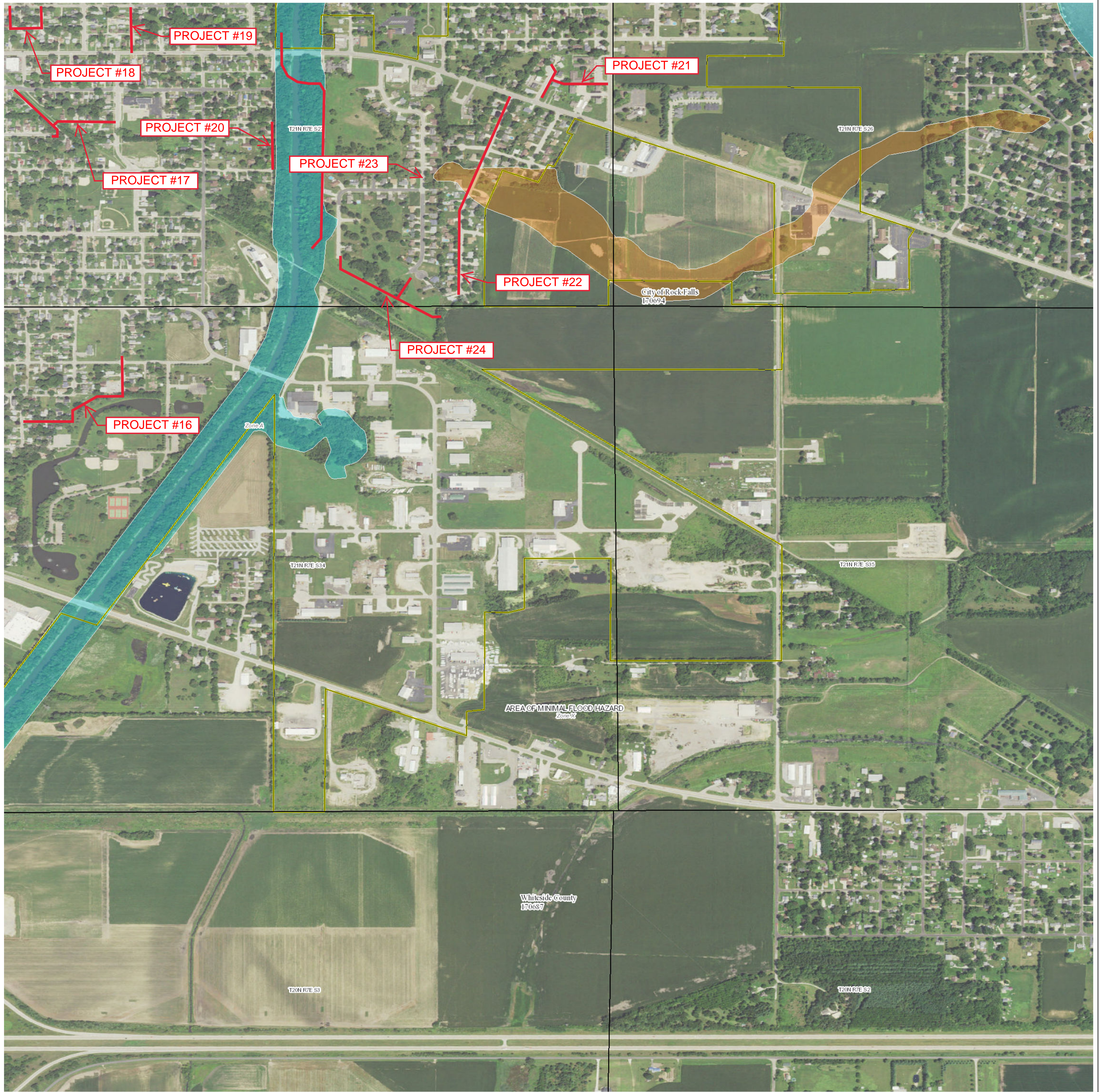
NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

WHITESIDE COUNTY, ILLINOIS AND INCORPORATED AREAS
PANEL 239 OF 485

Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF ROCK FALLS ILLINOIS	170694	0239
WHITESIDE COUNTY ILLINOIS	170687	0239

MAP NUMBER 17195C0239E
EFFECTIVE DATE 02/18/2011



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
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		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		8 Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
OTHER FEATURES		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

NOTES TO USERS

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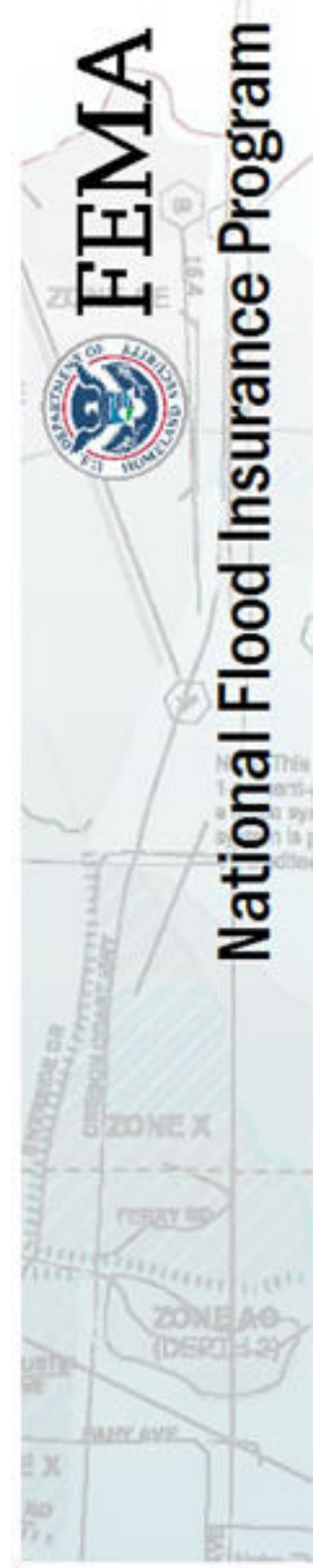
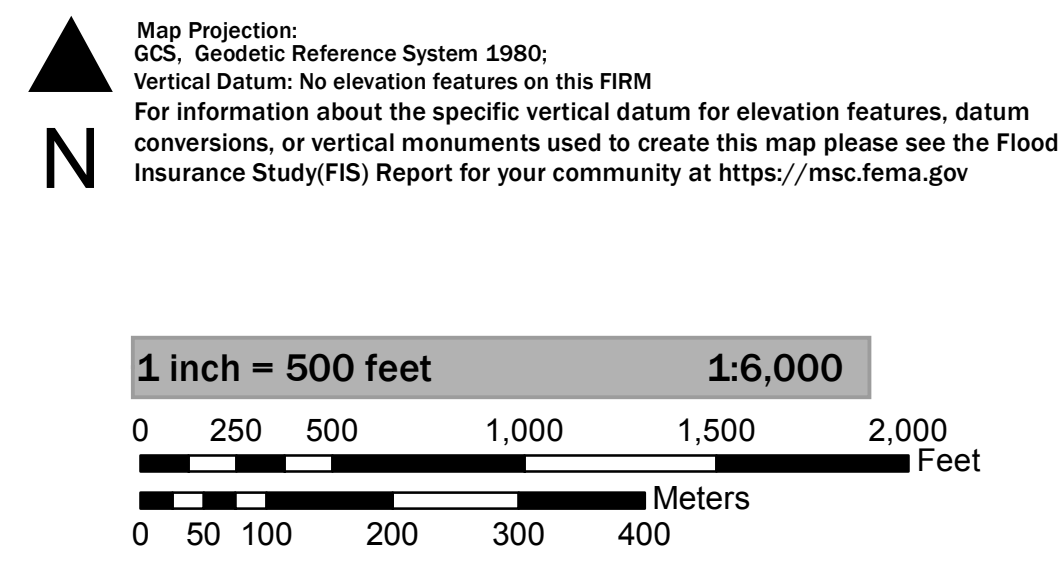
Basemap information shown on this FIRM was provided in digital format by USDA, Farm Service Agency (FSA). This information was derived from NAIP, dated April 11, 2018.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 6/5/2019 3:59:19 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at <https://www.fema.gov/media-library/assets/documents/118418>.

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SCALE



**NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP**

**WHITESIDE COUNTY, ILLINOIS
AND INCORPORATED AREAS**
PANEL 243 OF 485

Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF ROCK FALLS ILLINOIS	170694	0243
WHITESIDE COUNTY ILLINOIS	170687	0243

Exhibit H

IDNR Sign-off Request

Applicant: Willett, Hofmann & Associates, Inc
Contact: Dan Loos
Address: 809 East Second Street,
PO BOX 367
Dixon, IL 61021

IDNR Project Number: 1911610
Date: 06/05/2019
Alternate Number: WHA #1487D18

Project: City of Rock Falls - 2019 Project Plan
Address: Various Streets, Rock Falls

Description: Replacement or looping of approximately 30,775 lineal feet of watermain throughout the City of Rock Falls, IL.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

- Rock River Sterling Rock Falls Segment INAI Site
- Black Sandshell (*Ligumia recta*)
- Gravel Chub (*Erimystax x-punctatus*)
- Lake Sturgeon (*Acipenser fulvescens*)
- Northern Long-Eared Myotis (*Myotis septentrionalis*)

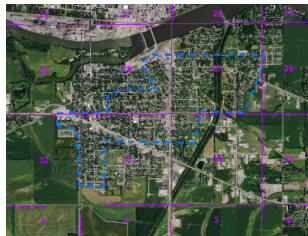
Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Whiteside

Township, Range, Section:

- 21N, 7E, 26
- 21N, 7E, 27
- 21N, 7E, 28
- 21N, 7E, 29
- 21N, 7E, 32
- 21N, 7E, 33
- 21N, 7E, 34



IL Department of Natural Resources Contact

Impact Assessment Section
217-785-5500
Division of Ecosystems & Environment

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.
2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.
3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

Security

EcoCAT operates on a state of Illinois computer system. We may use software to monitor traffic and to identify unauthorized attempts to upload, download, or change information, to cause harm or otherwise to damage this site. Unauthorized attempts to upload, download, or change information on this server is strictly prohibited by law.

Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.

Exhibit I

Water Department Expenses and Revenues Summary and Recommended Budget

Water Department Expenses and Revenues Summary and Recommended Budget

	Audited Expenses and Revenues			Projected Revenue and Expenses				
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Revenue								
Customer Charges								
Residential	\$ 864,845	\$ 872,767	\$ 867,266	\$ 932,000	\$ 992,000	\$ 1,054,500	\$ 1,054,500	\$ 1,054,500
Commercial	\$ 218,917	\$ 233,295	\$ 224,715	\$ 226,000	\$ 240,000	\$ 253,000	\$ 253,000	\$ 253,000
Industrial	\$ 9,590	\$ 7,471	\$ 33,031	\$ 32,000	\$ 34,000	\$ 36,000	\$ 36,000	\$ 36,000
Municipal	\$ 7,479	\$ 6,445	\$ 6,124	\$ 7,000	\$ 7,500	\$ 8,000	\$ 8,000	\$ 8,000
Capital Improvements	\$ 131,116	\$ 131,625	\$ 131,809	\$ 185,000	\$ 185,000	\$ 185,000	\$ 185,000	\$ 185,000
Debt Service	\$ 264,792	\$ 266,031	\$ 266,410	\$ 266,500	\$ 266,500	\$ 266,500	\$ 266,500	\$ 266,500
Total Customer Charges	\$ 1,496,739	\$ 1,517,633	\$ 1,529,355	\$ 1,648,500	\$ 1,725,000	\$ 1,803,000	\$ 1,803,000	\$ 1,803,000
Interest Income	\$ 2,849	\$ 3,443	\$ 8,741	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000
Employee Health Insurance Reimbur.	\$ -	\$ -	\$ 18,205	\$ -	\$ -	\$ -	\$ -	\$ -
Water Hydrant Rental	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Water Bulk Purchase	\$ 8,382	\$ 9,993	\$ -	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000
Water Tower Rental	\$ 15,600	\$ 15,600	\$ 18,180	\$ 16,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ 16,000
Penalties	\$ 12,841	\$ 13,919	\$ 14,321	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000
Hook-Up Fees/New Services	\$ 3,140	\$ 1,135	\$ 1,879	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000
Reconnect Fees	\$ 10,600	\$ 14,790	\$ 13,964	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000
Sale of Materials	\$ 136	\$ 480	\$ 2,214	\$ -	\$ -	\$ -	\$ -	\$ -
Transfer from Customer Service	\$ -	\$ -	\$ 15,000					
Groundwater Recharge Donations	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Grant Funds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Miscellaneous Income	\$ 3,436	\$ 3,981	\$ 5,203	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000
Other Financing Sources	\$ -	\$ -	\$ 13,645	\$ -	\$ -	\$ -	\$ -	\$ -
Subtotal Revenue	\$ 1,553,724	\$ 1,580,975	\$ 1,640,707	\$ 1,689,500	\$ 1,766,000	\$ 1,844,000	\$ 1,844,000	\$ 1,844,000
Operation and Maintenance Expenses								
Transfer to CUD Fund	\$ 11,466	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Groundwater Recharge	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Books	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
R&M Wells, Pumps & Motors	\$ 23,914	\$ 7,785	\$ 6,951	\$ 7,000	\$ 7,140	\$ 7,283	\$ 7,428	\$ 7,577
R&M Filters and Backwash	\$ 6,656	\$ 6,175	\$ 23	\$ 6,000	\$ 6,120	\$ 6,242	\$ 6,367	\$ 6,495
Lab Supplies & Equipment	\$ 1,887	\$ 2,920	\$ 1,767	\$ 2,500	\$ 2,550	\$ 2,601	\$ 2,653	\$ 2,706
Cross Connection	\$ 270	\$ 761	\$ 338	\$ 400	\$ 408	\$ 416	\$ 424	\$ 433
GIS	\$ 21,597	\$ 31,320	\$ 31,756	\$ 32,000	\$ 32,640	\$ 33,293	\$ 33,959	\$ 34,638
Public Notification	\$ 1,581	\$ 450	\$ 433	\$ 500	\$ 510	\$ 520	\$ 531	\$ 541
Alarm Expense	\$ 2,482	\$ 2,626	\$ 2,677	\$ 2,700	\$ 2,754	\$ 2,809	\$ 2,865	\$ 2,923
Salary/Wages	\$ 299,368	\$ 331,748	\$ 344,801	\$ 358,594	\$ 372,937	\$ 387,855	\$ 403,369	\$ 419,504
Severance/Bonus and Sick Pay	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Overtime	\$ 18,396	\$ 25,769	\$ 28,390	\$ 25,000	\$ 25,500	\$ 26,010	\$ 26,530	\$ 27,061
Dues/Subscriptions/Publications	\$ 330	\$ 2,313	\$ 2,160	\$ 2,000	\$ 2,040	\$ 2,081	\$ 2,122	\$ 2,165
Postage & Office Supplies	\$ 3,319	\$ 2,425	\$ 1,349	\$ 2,500	\$ 2,550	\$ 2,601	\$ 2,653	\$ 2,706
Equipment Rental	\$ -	\$ -	\$ -	\$ 500	\$ 510	\$ 520	\$ 531	\$ 541
R&M Equipment	\$ 2,674	\$ 1,422	\$ 3,212	\$ 2,500	\$ 2,550	\$ 2,601	\$ 2,653	\$ 2,706
Capital Cost Recovery	\$ 3,601	\$ 4,007	\$ 4,096	\$ 4,200	\$ 4,284	\$ 4,370	\$ 4,457	\$ 4,546
Information Technology	\$ 4,879	\$ 3,736	\$ 1,629	\$ 3,500	\$ 3,570	\$ 3,641	\$ 3,714	\$ 3,789
R&M Hydrants	\$ 12,371	\$ 10,118	\$ 7,761	\$ 10,000	\$ 10,200	\$ 10,404	\$ 10,612	\$ 10,824
R&M Distribution	\$ 164,272	\$ 96,462	\$ 137,133	\$ 130,000	\$ 132,600	\$ 135,252	\$ 137,957	\$ 140,716
Remove and Set Meters	\$ 60,257	\$ 58,260	\$ 67,852	\$ 62,000	\$ 63,240	\$ 64,505	\$ 65,795	\$ 67,111
R&M Structures and Buildings	\$ 9,315	\$ 7,836	\$ 10,441	\$ 9,000	\$ 9,180	\$ 9,364	\$ 9,551	\$ 9,742
Meetings/Seminars/Schools	\$ 5,094	\$ 2,542	\$ 1,950	\$ 2,500	\$ 2,550	\$ 2,601	\$ 2,653	\$ 2,706
Groundwater Protection	\$ 760	\$ 560	\$ 100	\$ 600	\$ 612	\$ 624	\$ 637	\$ 649
Vehicle Gas & Oil	\$ 7,160	\$ 7,246	\$ 10,062	\$ 9,000	\$ 9,180	\$ 9,364	\$ 9,551	\$ 9,742
Vehicle O&M	\$ 11,839	\$ 23,563	\$ 4,512	\$ 16,000	\$ 16,320	\$ 16,646	\$ 16,979	\$ 17,319
Backhoe Expense	\$ 998	\$ 7,771	\$ 14,245	\$ 8,000	\$ 8,160	\$ 8,323	\$ 8,490	\$ 8,659
General Plant/Operating	\$ 22,549	\$ 17,370	\$ 16,229	\$ 18,000	\$ 18,360	\$ 18,727	\$ 19,102	\$ 19,484
Water Analysis (PDC)	\$ 4,439	\$ 4,003	\$ 5,051	\$ 5,000	\$ 5,100	\$ 5,202	\$ 5,306	\$ 5,412
R&M Towers	\$ 7,366	\$ 1,144	\$ 17,763	\$ 5,000	\$ 5,100	\$ 5,202	\$ 5,306	\$ 5,412
Chemicals	\$ 15,784	\$ 12,367	\$ 12,175	\$ 13,000	\$ 13,260	\$ 13,525	\$ 13,796	\$ 14,072
Electric	\$ 56,772	\$ 64,850	\$ 70,950	\$ 70,000	\$ 71,400	\$ 72,828	\$ 74,285	\$ 75,770
Sewer	\$ 666	\$ 828	\$ 1,324	\$ 1,500	\$ 1,530	\$ 1,561	\$ 1,592	\$ 1,624
Water	\$ 615	\$ 664	\$ 880	\$ 1,000	\$ 1,020	\$ 1,040	\$ 1,061	\$ 1,082
Telephone	\$ 9,306	\$ 10,374	\$ 14,101	\$ 14,000	\$ 14,280	\$ 14,566	\$ 14,857	\$ 15,154
Utility Tax	\$ 1,646	\$ 1,832	\$ 1,870	\$ 2,000	\$ 2,040	\$ 2,081	\$ 2,122	\$ 2,165
Heating Gas	\$ 7,143	\$ 6,694	\$ 3,404	\$ 4,000	\$ 4,080	\$ 4,162	\$ 4,245	\$ 4,330
Legal and Professional	\$ 5,712	\$ 4,988	\$ 8,098	\$ 7,000	\$ 7,140	\$ 7,283	\$ 7,428	\$ 7,577
Auditing	\$ 4,830	\$ 4,179	\$ 4,150	\$ 5,000	\$ 5,100	\$ 5,202	\$ 5,306	\$ 5,412
Engineering	\$ -	\$ 868	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Rent-Water Share	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Bank Fees	\$ 148	\$ 37	\$ 68	\$ 200	\$ 204	\$ 208	\$ 212	\$ 216
Bad Debt	\$ -	\$ 13,114	\$ 6,033	\$ 5,000	\$ 5,100	\$ 5,202	\$ 5,306	\$ 5,412
Consultant Fee	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Social Security	\$ 18,993	\$ 21,231	\$ 22,205	\$ 23,093	\$ 24,017	\$ 24,978	\$ 25,977	\$ 27,016
IMRF	\$ 34,880	\$ 38,030	\$ 36,212	\$ 38,000	\$ 38,760	\$ 39,535	\$ 40,326	\$ 41,132
Temp. Employee	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Mapping Location	\$ 1,174	\$ 11,932	\$ 4,730	\$ 5,000	\$ 5,100	\$ 5,202	\$ 5,306	\$ 5,412
Insurance - Employee	\$ 70,235	\$ 86,740	\$ 105,236	\$ 121,021	\$ 127,072	\$ 133,426	\$ 140,097	\$ 147,102
Insurance - General	\$ 30,917	\$ 35,772	\$ 37,976	\$ 40,000	\$ 40,800	\$ 41,616	\$ 42,448	\$ 43,297
Medicare Tax	\$ 4,442	\$ 4,965	\$ 5,193	\$ 5,401	\$ 5,617	\$ 5,842	\$ 6,075	\$ 6,318
JULIE	\$ 713	\$ 822	\$ 749	\$ 800	\$ 816	\$ 832	\$ 849	\$ 866
Barricade	\$ -	\$ -	\$ 1,448	\$ 200	\$ 204	\$ 208	\$ 212	\$ 216
Utility Office Budget	\$ 50,341	\$ 47,250	\$ 67,992	\$ 68,000	\$ 69,360	\$ 70,747	\$ 72,162	\$ 73,605
Uniform	\$ 5,099	\$ 5,435	\$ 4,281	\$ 5,000	\$ 5,100	\$ 5,202	\$ 5,306	\$ 5,412
Small Tools	\$ 528	\$ 2,804	\$ 1,797	\$ 1,500	\$ 1,530	\$ 1,561	\$ 1,592	\$ 1,624
Supplies	\$ 1,404	\$ 1,812	\$ 2,025	\$ 2,500	\$ 2,550	\$ 2,601	\$ 2,653	\$ 2,706
Physicals	\$ -	\$ -	\$ -	\$ 100	\$ 102	\$ 104	\$ 106	\$ 108
Safety	\$ 1,945	\$ 3,866	\$ 3,809	\$ 4,000	\$ 4,080	\$ 4,162	\$ 4,245	\$ 4,330
Miscellaneous	\$ 891	\$ 765	\$ 966	\$ 1,000	\$ 1,020	\$ 1,040	\$ 1,061	\$ 1,082
Contribution General Fund	\$ 54,918	\$ 54,837	\$ 56,616	\$ 60,000	\$ 61,200	\$ 62,424	\$ 63,672	\$ 64,946
Loss	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Subtotal Expenses	\$ 1,087,942	\$ 1,097,390	\$ 1,196,972	\$ 1,223,309	\$ 1,259,147	\$ 1,296,194	\$ 1,334,494	\$ 1,374,095
Capital Improvement Expenses	\$ 203,792	\$ 822,567	\$ 446,715	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000
Debt Service Expenses								
Interest Payable - IEPA Loan	\$ 19,014	\$ 18,643	\$ 20,339	\$ 17,056	\$ 13,550	\$ 9,947	\$ 6,246	\$ 3,226
IEPA Loan - 2002 - 2022	\$ 88,485	\$ 91,074	\$ 93,739	\$ 96,481	\$ 99,305	\$ 102,210	\$ 105,201	\$ -
Electric Dept. Loan Utility Office	\$ 45,159	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sewer Dept Loan - 2010 - 2020	\$ 18,000	\$ 18,000	\$ 18,000	\$ 18,000	\$ -	\$ -	\$ -	\$ -
IEPA Loan - 2016 - 2036	\$ -	\$ 10,903	\$ 35,243	\$ 36,599	\$ 37,283	\$ 37,980	\$ 38,689	\$ 39,412
Schmitt Extension-Bond Repayment			\$ 24,730	\$ 86,500	\$ 89,925	\$ 88,275	\$ 86,625	\$ 89,900
IEPA Loan - 2020 - 2040						\$ 30,700	\$ 30,700	\$ 30,700
IEPA Loan - 2021 - 2041							\$ 28,600	\$ 28,600
IEPA Loan - 2022 - 2042								\$ 38,000
IEPA Loan - 2023 - 2043								
IEPA Loan - 2024 - 2044								
Subtotal Debt Service	\$ 170,658	\$ 138,619	\$ 192,050	\$ 254,637	\$ 240,062	\$ 269,112	\$ 296,062	\$ 229,838
Total Water System Expenses	\$ 1,462,392	\$ 2,058,577	\$ 1,835,736	\$ 1,677,946	\$ 1,699,210	\$ 1,765,306	\$ 1,830,556	\$ 1,803,933
Net Income / (Loss)	\$ 91,332	\$ (477,601)	\$ (195,029)	\$ 11,554	\$ 66,790	\$ 78,694	\$ 13,444	\$ 40,067