IN THE
COURT OF APPEALS OF INDIANA

Cause No. 18A-EX-00844

NOW!, INC.,	)	
	)	
Appellant (Intervenor Below),	)	Appeal from the Indiana Utility
	)	Regulatory Commission
v.	)	
	)	
INDIANA-AMERICAN WATER COMPANY INC. and CITY OF CHARLESTOWN, INDIANA,	)	IURC Cause No: 44976
	)	Hon. James F. Huston, Chairman
Appellees (Petitioners Below),	)	Hon. Sarah Freeman,
	)	Hon. Angela Weber, and
INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR,	)	Hon. David E. Ziegner,
	)	Commissioners
	)	
Appellees (Statutory Representative/Respondent Below).	)	Carol Sparks Drake,
	)	Administrative Law Judge

APPELLEE'S APPENDIX
VOLUME 2 OF 3 VOLUMES
PAGES 1 THROUGH 250

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Attorneys for Appellee-Petitioner,
City of Charlestown, Indiana

VERIFIED DIRECT TESTIMONY OF DONNA S. COOMER
ON BEHALF OF THE CITY OF CHARLESTOWN, INDIANA

Cause No. 44976

Q. Please state your name, occupation and business address.

A. My name is Donna S. Coomer. I am the elected Clerk-Treasurer of the City of Charlestown, Indiana ("Charlestown"). My business address is City Hall, 304 Main Cross Street, Charlestown, Indiana, 47111.

Q. Please describe your professional and public service experience.

A. As I indicated, I am the elected Clerk-Treasurer of Charlestown. I have served in that capacity since 2000. As Clerk-Treasurer, I maintain Charlestown's records and its financial accounts, prepare and file legal notices and budgets, collect and disburse all Charlestown funds, and handle utility billing and receipts, among my other duties. Prior to my election as Clerk-Treasurer, I worked for a financial institution and did accounting for local businesses.

Q. What is the purpose of your testimony?

A. My testimony supports the proposed transaction between Charlestown and Indiana-American Water Company, Inc. ("Indiana-American") wherein Charlestown would dispose of its water utility assets through a sale and a lease to

Indiana-American (the "Proposed Transaction"). My testimony focuses on Charlestown's financial records related to its water utility.

Q. What attachments are you sponsoring?

A. I sponsor the following attachments:

Attachment DSC-1: 2016 IURC Annual Report

Attachment DSC-2: Detail of appropriations for water utility not funded by water utility revenue

Attachment DSC-3: Most recent State Board of Accounts Audit

Attachment DSC-4: Report on Use of Proceeds from 2008 Bond Issuance

Attachment DSC-5: Capital Asset Ledger for Water Utility

Attachment DSC-6: Council Minutes for April 3, 2017, May 11, 2017, July 3, 2017, and July 6, 2017

Attachment DSC-7: Proof of Publication of Notice for Public Hearing

Attachment DSC-8: Ordinance approving asset purchase agreement and well field lease (without attachments)

FINANCIAL HISTORY OF CHARLESTOWN'S WATER UTILITY

Q. Please describe the financial state of Charlestown's water utility.

A. Charlestown's water utility is not self-sufficient and does not generate sufficient funds to make the investments we have made in the utility over the years.

From a utility revenue perspective, Charlestown's 2016 Annual Report to the Commission, attached as Attachment DSC-1, indicates that the water utility needs a rate increase. Page F-3 indicates the utility's net income was only $30,142. With $7.2 million in capital expenditures needed over the next five years alone, as testified to by Charlestown witness William A. Saegesser, a substantial rate increase is necessary to pay for all of the needed capital improvements. Further, over $794,000 of the water utility's capital improvements over the years has been funded from additional appropriations from redevelopment commission funds, Charlestown general funds and other capital accounts of Charlestown. Attachment DSC-2 is a compilation I developed from Charlestown records that identifies non-utility funds that have been appropriated to Charlestown's water utility. Attachment DSC-2 demonstrates that Charlestown savings, EDIT and TIF monies have been used to make improvements to the water utility. Accordingly, Charlestown's water ratepayers are being subsidized with other Charlestown funds.

Q. Did Charlestown comply with Indiana law in using these non-utility funds to invest in the water utility system?

A. Yes, I believe so. No State Board of Accounts audit ever found fault with Charlestown for expending non-utility funds on the water utility. Charlestown's most recent State Board of Accounts Audit is attached as Attachment DSC-3. In

fact, no State Board of Accounts Audit has included any recommendation or comment during my tenure as Charlestown's Clerk-Treasurer.

Q. Did Charlestown issue water utility revenue bonds in 2006 as authorized by the Indiana Utility Regulatory Commission (the "Commission") in Cause No. 42878?

A. Yes.

Q. Did Charlestown spend the bond proceeds and make system improvements consistent with its testimony in Cause No. 42878?

A. I believe so. A print out of the records of Charlestown identifying the uses of the bond proceeds is attached to my testimony as Attachment DSC-4.
A review of Attachment DSC-4 indicates that Charlestown built the storage tank with the bond proceeds and made numerous improvements to its distribution system, primarily looping mains to avoid sediment build up.

Q. What is the amount of Charlestown's water utility outstanding debt?

A. The outstanding debt of Charlestown's water utility is approximately $1,125,000, which is made up entirely of the outstanding debt on the bonds issued pursuant to Cause No. 42878.

Q. Has Charlestown disbursed or otherwise directed water utility funds in violation of Indiana law, including Indiana Code § 8-1.5-2-25?

A. No. Again, I would point to Charlestown's most recent State Board of Accounts Audit, which I mentioned is attached as Attachment DSC-3. The audit found no issues of illegally disbursed or diverted funds.

Q. Has Charlestown already appropriated or otherwise earmarked funds from the proceeds of the Proposed Transaction?

A. No. Charlestown's Common Council appropriates funds and has not used its appropriation powers to appropriate the funds it does not yet have. Obviously, paying off the outstanding water utility revenue bonds will be required as part of the Proposed Transaction. Additionally, Mayor Hall wants to provide a system of sewer bill credits with the proceeds from the Proposed Transaction to help soften the rate impact of the Proposed Transaction. No other uses of the funds have been established and any use of the funds will need the Charlestown Common Council to appropriate the funds.

CAPITAL ASSET RECORDS

Q. Do you have fixed asset records for Charlestown's water utility?

A. Yes. Attached as Attachment DSC-5 is the capital asset ledger for Charlestown's water utility. While Charlestown acknowledges that Attachment DSC-5 does not account for some of the water utility assets included in the appraisal due to lack of

records from prior administrations, Attachment DSC-5 nevertheless provides the best available evidence that the original cost of Charlestown's aggregated water utility assets is $7,722,740.77.

CHARLESTOWN RECORDS RELATED TO PROPOSED TRANSACTION

Q. What records of Charlestown do you maintain related to the Proposed Transaction?

A. As I testified earlier, as Clerk-Treasurer, it is my responsibility to maintain Charlestown's records. Accordingly, I am attaching to my testimony certain records of Charlestown related to the Proposed Transaction. Those records are as follows:

Attachment DSC-6: Council Minutes for April 3, 2017, May 11, 2017, July 3, 2017, and July 6, 2017

Attachment DSC-7: Proof of Publication of Notice for Public Hearing

Attachment DSC-8: Ordinance approving asset purchase agreement and well field lease (without attachments)

CONCLUSION

Q. Does this conclude your direct testimony at this time?

A. Yes, it does.

Verification

I hereby verify under the penalties for perjury that the foregoing representations are true to the best of my knowledge, information and belief.

Signature: Donna S. Coomer Dated: 8/17/17

Donna S. Coomer

Attachment DSC-1

Charlestown's 2016 IURC Annual Report

RECEIVED
April 25, 2017
INDIANA UTILITY
REGULATORY COMMISSION

ANNUAL REPORT

CLASS: ☐ A ☐ B ☐ C

MUNICIPAL OR NOT-FOR-PROFIT WATER

Charlestown Water Utility
NAME OF UTILITY

304 Main Cross Street
STREET ADDRESS

Charlestown, IN 47111
CITY, STATE & ZIP CODE

www.CityofCharlestown.com
WEBSITE URL:

INDIANA UTILITY REGULATORY COMMISSION

FOR THE YEAR ENDED December 31, 2016

OFFICER TO WHOM CORRESPONDENCE CONCERNING THIS REPORT SHOULD BE ADDRESSED:

NAME: Donna Coomer TITLE: Clerk Treasurer TELE. NO.: 812.256.7126

ADDRESS (If Different Than Above): _____

E-MAIL ADDRESS: Donna.Coomer@CityofCharlestown.com

REPORT MUST BE FILED NOT LATER THAN APRIL 30, 2017

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INSTRUCTIONS

1. Prepare this report in conformity with the 1996 National Association of Regulatory Utility Commissioners (NARUC) Uniform System of Accounts (USOA) for the applicable Class Water Utility.

   Class A (Operating revenues of $1,000,000 or more)
   Class B (Operating revenues of $200,000 or more but less than $1,000,000)
   Class C (Operating revenues of less than $200,000)
   Please check the appropriate classification box on the cover page of this report.

2. Complete each question fully and accurately, even if it has been answered in a previous annual report. **NOTE: Many cells contain formulas, click on the cell before entering data to determine if a formula exists.** If you override a formula and want it back, click the "undo" arrow on the tool bar at the top of the screen.

3. The report must be filled in, and every question answered. LEAVE NO SCHEDULE BLANK. Insert the words "none" or "not applicable" or "N/A" when appropriate.

4. Where dates are called for, the month and day should be stated as well as the year.

5. Monetary items (except averages) throughout the report should be shown rounded to the nearest dollar.

6. If there is not enough room on any schedule, an additional page or pages may be added, provided the format of the added schedule matches the format of the insufficient schedule. Such schedules should reference the appropriate schedules, state the name of the utility, and state the year of the report.

7. Date and Utility Name inputs on cover page will flow through document.

8. Please scale all pages to print to one page using Excel's pull down menu as follows: File, Page Setup, Page (tab). In the "Scaling" section, choose "fit to 1 page wide by 1 tall."

9. Please print out and sign the Certification page. This page, and the Annual Report is to be submitted through the Commission's electronic filing system at http://www.in.gov/iurc/2447.htm A copy of the Annual Report should be retained by the Utility.

10. Please complete supporting schedules for Balance Sheet and Income Statement. **PLEASE NOTE**: Complete schedules F-5 through F-21 first, then fill in remaining information in Schedules F-1 through F-4. *Most supporting schedules are linked to cells contained in the balance sheet and income statement.*

11. **As you complete the schedules you will have error messages.** Upon completion of the schedules, if there are still error messages go to the "Errors" worksheet. The "Errors" worksheet lists all errors that need to be corrected prior to submission to the Commission. If you need further assistance please call (317) 234-5070.

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Glossary of Terms

Below are definitions of common terms used throughout these forms:

Account - A record in the general ledger that is used to collect and stor similar information. Utilities present their annual accounts in two main parts: the Balance Sheet and the Income Statement.

Amortization - The allocation of an expense over a predetermined time period -more than one year. Amortization typically occurs for expenses that do not occur annually such as rate case expense, debt service reserve or working capital. These items are typically amortized over the expected life of the proposed rates. Annual costs should be included in rates for the utility to have sufficient funds to cover its costs when incurred.

Annual Report - A financial and operational report required to be filed by a regulated utility with the Commission on April 30th of every year.

Assets - are items of value an utility owns, such as cash, inventory, accounts receivables, buildings, plant and office equipment.

Balance Sheet - A financial statement of assets, liabilities and capital of a utility.

Capital or Capitalized - money used for construction projects or expenses that should be considered assets.

Commission or IURC - means the Indiana Utility Regulatory Commission.

Depreciation Expense - Depreciation expense is a method of attributing the historical or original cost of an asset over its estimated useful life based on normal wear and tear. This process helps to normalize the cost of assets by spreading them over the useful lives of the assets. Most utilities use the composite group concept of depreciation, which is based on a weighted average of service lives and amounts included in asset account groups. The composite depreciation rates adopted by the IURC are as follows: Complete Water System - 2.0%, Purchase Water System - 1.7%, Complete Wastewater System - 2.5%, and Purchase Treatment System - 2.2%.

Double-Entry Accounting - Required of all Classes of utilities. A double-entry accounting system tracks financial activity in which the debits and credits of each transaction equal zero. Double-entry accounting employs the principle of accrual basis accounting.

Equity or Net Assets - is the amount of funds contributed by the owners plus the retained earnings or losses.

Income Statement - or Comparative Operating Statement is a financial statement that reports a utility's financial performance (revenues and expenses) over an annual period of time.

Interest Income - An amount earned from the utility's investments. Interest Income is typically used as an offset to the utility's revenue requirement.

Liabilities - are amounts owed to other entities.

Master Plan - Serves as an infrastructure investment guide to maintain and serve current and future customers.

Net Operating Income - The amount of operating revenue that remains after operating expenses are deducted.

Normalize - The process of adjusting test year revenues and expenses to capture changes that occurred during the test year.

Operating Revenues - The amount a utility collects for services rendered, which includes fees and service charges.

Operating Expenses - Costs a utility incurs to provide service (i.e., maintenance, depreciation, taxes, etc.).

Statement of Cash Flows - is a financial statement that shows how changes in balance sheet accounts and income affect a utility's cash and cash equivalents. This statement breaks the analysis down to operating, financing and investing activities.

Trial Balance - is a list of all the General Ledger accounts contained in the ledger of a utiilty. This list contains the name and value of the ledger accounts, such as Cash, Inventory, Accounts Receivable, etc. A Trial Balance can be used to complete the Financial Section of this report.

Uniform System of Accounts (USoA) - The USoA prescribe accounting instructions and classifications to achieve uniform and consistent accounting records to allow regulators to fulfill their regulatory responsibilities.

Item	Error
Name of Utility on Cover Sheet	None
Name and address of person to contact in case of emergency	None
Date of original organization of the utility	None
Officer's information	None
Director's Information	None
Business Contracts with Officers, Directors and Affiliates	None
Affiliation of Officers and Directors	None
Does the Utility have any union Employees Y/N	None
How Many Union Employees Work at Your Utility	None
Name of Company or Related Party	None
Name of Company or Related Party	None
Contractual Services - Payments to Counsel	None
Contractual Services - Payments to Consultants	None
Contractual Services - Contribution to Offices Seeker/Political Committees	None
Business or Service Conducted	None
Question 1 E-6	None
Question 2 E-6	None
Question 3 E-6	None
Current Year Balance Sheet	No Error, Balance Sheet Balances
Prior Year Balance Sheet	No Error, Balance Sheet Balances
Water Operating Section	Water Operating Section
Beginning Year Number of Customers	None
Ending Year Number of Customers	None
Question 1 Page W-8	None
Question 1a Page W-8 Line 30	None
Question 1b Page W-8 Line 31	None
Question 1c Page W-8 Line 32	None
Question 1d Page W-8 Line 33	None
Question 1e Page W-8 Line 34	None
Question 2 Page W-8	None
Question 3 Page W-8	None
Question 5 Page W-8	None
Question 6 Page W-8	None

You have 0 Errors that Need to be Corrected

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1. 8-1-2-10. NARUC- Uniform System of Accounts - Every public utility shall keep and render to the commission, in the manner and form prescribed by the commission, uniform accounts of all business transacted. In formulating a system of accounting for any class of public utilities, the commission shall consider any system of accounting established by any federal law, commission or department and any system authorized by a national association of such utilities.

2. 8-1-2-12. Annual Report Forms - The commission shall prescribe the forms of all books, accounts, papers and records required to be kept, and every public utility is required to keep and render its books, accounts, papers and records accurately and faithfully in the manner and form prescribed by the commission and to comply with all directions of the commission relating to such books, accounts, papers and records.

3. 8-1-2-13. Pubic Utility Bookkeeping Requirements - No public utility shall keep any other books, accounts, papers or records of the business transacted than those prescribed or approved by the commission, unless required by other public authority.

4. 8-1-2-16. Closing accounts - Date - The accounts shall be closed annually on the thirty-first day of December, and a balance sheet of that date promptly taken therefrom. On or before the thirtieth day of April following, such balance sheet, together with such other information as the commission shall prescribe, verified by an officer of the public utility, shall be filed with the commission.

5. 8-1-2-17. Accounts; Examination and Audit - The commission shall provide for the examination and audit of all accounts, and all items shall be allocated to the accounts in the manner prescribed by the commission.

6. 8-1-2-52. Information to be furnished - Every public utility shall furnish to the commission all information required by it to carry into effect the provisions of this chapter and shall make specific answers to all questions submitted by the commission.

7. 8-1-2-108. Penalty for failure to file reports or give information - (a) An officer, agent or employee of any public utility, or a public utility (as defined in this chapter) who: (1) fails to fill out and return any blanks as required by this chapter; (2) fails to answer any question therein propounded; (3) knowingly gives a false answer to any such question or evades the answer to any such question where the fact inquired of is within his knowledge; (4) fails, upon proper demand, to exhibit to the commission, any commissioner, any administrative law judge or any person authorized to examine the same, any book, paper, account, record or memoranda of the public utility which is in his possession or under his control; (5) fails to keep his system of accounting, or any part thereof, which is required by the commission; or (6) refuses to do any act or thing in connection with the system of accounting when so directed by the commission or its authorized representative; commits a Class B infraction.
(b) A municipally owned and operated utility, under the jurisdiction of the commission for approval of rates and charges, shall file with the commission an annual report of the operation of said plant on forms to be furnished by the commission, which forms are to be substantially the same as for reports filed annually with the commission by public utilities. Such annual reports shall remain in the office of said commission as a public record. Whenever in this chapter public utilities are required to make reports to the commission or are otherwise subject to the commission, municipally owned utilities are exempted from making such reports and are not under the jurisdiction of the commission except as otherwise provided.

8. 8-1-2-112. Separate violations - Every day during which any public utility or any officer, agent, or employee thereof shall fail to observe and comply with any order or direction of the commission, or to perform any duty enjoined by this chapter, shall constitute a separate and distinct violation of such order or direction of this chapter, as the case may be.

9. 8-1.5-3-14. Annual report; exemption; examination of accounts - A municipally owned utility under the jurisdiction of the commission for approval of rates and charges and of the issuance of stock, bonds, notes, or other evidence of indebtedness shall file with the commission an annual report of the operation of the plant on forms prescribed by the commission.

EXECUTIVE SUMMARY

GENERAL INFORMATION

Charlestown Water Utility
(Exact Name of Utility)

Name and address of person to contact in case of emergency:
Mike Perry, Utility Superintendent
304 Main Cross Street
Charlestown, IN 47111
Primary Telephone: 502-643-0524 Alternative Telephone: _____
E-mail: ctownwwtp@aol.com

Alternative Emergency Contact name and address:

Primary Telephone: _____ Alternative Telephone: _____

List below the address at which the utility's books and records are located:
304 Main Cross Street
Charlestown, IN 47111

Telephone: (812) 256-7126

List below any audit groups reviewing records and operations:
Indiana State Board of Accounts

Date of original organization of the utility: Appr. 1937

List below the names, titles and time spent on total business activities and the compensation received as an officer from the utility:

	Officer's Name	Title	Hours spent as Officer of Utility	% of Time spent as Officer of Utility	Officer's Salary
1.	n/a				
2.					
3.					
4.					
5.					
6.					
7.					

List below the names, titles, the number of director meetings attended by each director and the compensation received as a director from the utility:

	Director's Name	Title	Number of Directors Meetings Attended	Director's Compensation
1.	n/a			
2.				
3.				
4.				
5.				
6.				
7.				

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

DIRECTORY OF PERSONNEL WHO CONTACT THE STATE REGULATORY COMMISSION

NAME OF COMPANY REPRESENTATIVE (1) (2)	TITLE OR POSITION	ORGANIZATIONAL UNIT TITLE (3)	USUAL PURPOSE FOR CONTACT WITH THE COMMISSION
Bob Hall	Mayor	City of Charlestown	Rules & regs
Donna Coomer	Clerk Treasurer	City of Charlestown	Accounting
Deen Rogers	rate consultant & financial advisor	Umbaugh & Assoc	finances & rates

(1) Also list appropriate legal counsel, accountants and others who may not be on general payroll.
(2) Provide individual telephone numbers if the person is not normally reached at the utility.
(3) Name of company employed by if not on general payroll.

UTILITY PROFILE

Provide a brief narrative utility profile which covers the following areas:

A. Brief utility history
B. Public services rendered
C. Major goals and objectives
D. Major operating divisions and functions
E. Current and projected growth patterns
F. Major transactions having a material effect on operations
G. List Counties served
H. Affiliate Organization Chart (if applicable)

A. Began providing services around 1937. Last rate increase order issued August 2006.
B. Water utility service
C. To provide reliable and safe water services to customers
D. Source of Supply, Transmission & Distribution and Customer Service inclusive of billing and collection
E. No major growth is expected
F. None
G. Clark
H. N/A

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

BUSINESS CONTRACTS WITH OFFICERS, DIRECTORS AND AFFILIATES

List all contracts, agreements, or other business arrangements* (other than compensation related to position with Utility) between the Utility and any officer or director listed on page E-1. In addition, provide the same information with respect to professional services for each firm, partnership or organization with which the officer or director is affiliated.

NAME OF OFFICER DIRECTOR OR AFFILIATE	IDENTIFICATION OF SERVICE OR PRODUCT	CONTRACT EXECUTION DATE	CONTRACT EXPIRATION DATE	AMOUNT	NAME AND ADDRESS OF AFFILIATED ENTITY
n/a					

*Business Agreement, for this schedule, shall mean any oral or written business deal which binds the concerned parties for products or services during the reporting year or future years. Although the Utility and/or other companies will benefit from the arrangement, the officer or director is, however, acting on his behalf or for the benefit of other companies or people.

AFFILIATION OF OFFICERS AND DIRECTORS

For each of the officers and directors listed on page E-1, list the principal occupation or business affiliation if other than listed on page E-1, and all affiliations or connections with any other business or financial organization, firms, or partnerships. For purposes of this part, an officer or director will be considered to have an affiliation with any business or financial organization, firm or partnership in which he/she is an owner, officer, director, trustee, partner, or a person exercising similar functions.

NAME	PRINCIPAL OCCUPATION OR BUSINESS AFFILIATION	AFFILIATION OR CONNECTION	NAME AND ADDRESS OF AFFILIATION OR CONNECTION
n/a			

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Please complete the following information. Column A is the number of Full-time ("FT") Employee Equivalents in that salary range. Column B is the total gross dollar amount paid to those employees in that pay category. Column C is the total dollar cost for fringe benefits for employees in that salary range:

Does the Utility have any union employees enter "Y" or "N"? → n

Of the number of Full-time Employee Equivalents, please enter the number of union employees: → 0

A Full-time Employee Equivalent is equal to an employee working 2,080 hours per year. (For example, if two part time employees work 1,040 hours per year, the two employees equal one FT Employee Equivalent)

Salary Range			Number of Full-time Equivalents Column A	Salary Column B	Cost of Benefits Column C
300,001	--	350,000			
250,001	--	300,000			
200,001	--	250,000			
190,001	--	200,000			
180,001	--	190,000			
170,001	--	180,000			
160,001	--	170,000			
150,001	--	160,000			
140,001	--	150,000			
130,001	--	140,000			
120,001	--	130,000			
110,001	--	120,000			
100,001	--	110,000			
90,001	--	100,000			
80,001	--	90,000			
70,001	--	80,000			
60,001	--	70,000			
50,001	--	60,000			
40,001	--	50,000			
30,001	--	40,000	4.00	$ 123,814	$ 13,549
20,001	--	30,000			
10,001	--	20,000			
0	--	10,000			
Number of FT Employee Equivalents			4.00		

This information is requested pursuant to I.C. 8-1-2-48.

Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

Contractual Services

"Consultant" for the purpose of this form means a person in a status other than that of employee, paid to render service, advice, or information, and/or to lobby or represent the payer before any agency or branch of government. "Consultant" does not mean, in this context, any person or firm to whom payment has been made and which has been reported under the first part of this form, dealing with legal counsel. If a person has received payment both as a "consultant" and as an employee, reporting herein shall include both types of payment and the totals of each. There is no minimum for the "Total Paid" under which reporting need not be made. This information is requested pursuant to IC 8-1-2-26.

Payments to Counsel

Names	Legal Matter(s) for which paid	Total Amount Paid
n/a		

Payments to Consultants

Names	Description of Services	Total Amount Paid
Saegesser Engineering	Engineering	$ 69,733
Richard Henderson	Excavating	$ 52,916
Umbaugh & Assoc	Accounting	$ 400

Contributions to Officeseekers and/or Political Committees

Names of Payees	With Whom Registered (Fed. or State)	Total Amount Paid
n/a		

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

BUSINESSES WHICH ARE A BYPRODUCT, CO-BYPRODUCT OR JOINT PRODUCT RESULT OF PROVIDING WATER SERVICE

Complete the following for any business which is conducted as a byproduct, coproduct or joint product as a result of providing water service. This would include any business which requires the use of utility land and facilities. Examples of these types of businesses would be tree farms, cell tower leases, fertilizer manufacturing, etc. This would not include any business for which the assets are properly included in Account 121 - Nonutility Property along with the associated revenues and expenses also segregated out as nonutility.

BUSINESS OR SERVICE CONDUCTED	ASSETS		REVENUES		EXPENSES	
	BOOK COST OF ASSETS	ACCT. NO.	REVENUES GENERATED	ACCT. NO.	EXPENSES INCURRED	ACCT. NO.
n/a	$		$		$	

QUESTIONS RELATING TO COMPLIANCE WITH REQUIREMENTS OF LAWS CONCERNING DAMAGE TO UNDERGROUND FACILITIES

1. Has the utility complied with Indiana's "One Call" law by becoming a member of Indiana 811 (the Association) as required by Indiana Code §8-1-26-15? yes

   If yes, what date was complaince achieved? Oct-10

2. Do you have training programs for your employees to inform and educate them about how to comply with the recording and all other aspects of this law? If yes, please briefly describe the training program.
Training through Indiana Alliance of Rural Water and Silver Creek Water

3) Do you have training programs for contractors that you may hire to inform and educate them about how to comply with all aspects of this law? If yes, please briefly describe the training program.
No

RECEIVED
April 28, 2017
INDIANA UTILITY
REGULATORY COMMISSION

CERTIFICATION

Donna S. Coomer,
(Name of Officer)

Clerk Treasurer of Charlestown Water Utility
(Official title of Officer) (Exact legal title or name of utility)

states that he/she has examined the foregoing report; and verifies that to the best of his/her knowledge, information and belief, all statements of fact contained in the said report are true and the said report is a correct statement of the business affairs of the above named utility in respect to each and every manner set forth herein during the period from and including January 1, 20 16 to and including December 31, 20 16.

Donna S Coomer
(Signature of Officer)

4-26-17
(Date)

FINANCIAL SECTION

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

INSTRUCTION: Do Not Enter data on this page until all reference pages are complete.

COMPARATIVE BALANCE SHEET - ASSETS AND OTHER DEBITS

ACCT. NO. (a)	ACCOUNT NAME (b)	REF. PAGE (c)	CURRENT YEAR (d)	PREVIOUS YEAR (e)
	UTILITY PLANT			
101-106	Utility Plant	F-5	$7,722,741	$7,726,141
108	Less: Accumulated Depreciation of Utility Plant	F-6	5,697,364	5,647,270
110	Accumulated Amortization of Utility Plant	F-6		
	Net Plant		2,025,377	2,078,871
114-115	Utility Plant Acquisition Adjustment (Net)	F-5		
116	Other Utility Plant Adjustments			
	Total Net Utility Plant		2,025,377	2,078,871
	OTHER PROPERTY AND INVESTMENTS			
121	Nonutility Property	F-7		
122	Less: Accumulated Depreciation and Amortization of Nonutility Property			
	Net Nonutility Property			
123	Investment In Associated Entities	F-8		
124	Utility Investments	F-8		
125	Other Investments	F-8		
126-127	Special Funds	F-8	60,702	60,942
	Total Other Property & Investments		60,702	60,942
	CURRENT AND ACCRUED ASSETS			
131	Cash		90,626	86,134
132	Special Deposits	F-7	142,375	144,774
133	Other Special Deposits	F-7		
134	Working Funds			
135	Temporary Cash Investments			
141-144	Accounts and Notes Receivable, Less Accumulated Provision for Uncollectible Accounts	F-9	50,065	46,152
145	Accounts Receivable from Associated Entities	F-10		
146	Notes Receivable from Associated Entities	F-10		
151-153	Materials and Supplies Inventory	F-11		
161	Stores Expense			
162	Prepayments	F-11		
171	Accrued Interest and Dividends Receivable			
172	Rents Receivable			
173	Accrued Utility Revenues			
174	Misc. Current and Accrued Assets			
	Total Current and Accrued Assets		$283,066	$277,060

Charlestown Water Utility
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INSTRUCTION: Do Not Enter data on this page until all reference pages are complete.

COMPARATIVE BALANCE SHEET - ASSETS AND OTHER DEBITS

ACCT. NO. (a)	ACCOUNT NAME (b)	REF. PAGE (c)	CURRENT YEAR (d)	PREVIOUS YEAR (e)
	DEFERRED DEBITS			
181	Unamortized Debt Discount & Expense	F-12	$122,681	$134,949
182	Extraordinary Property Losses	F-12		
183	Preliminary Survey & Investigation Charges			
184	Clearing Accounts			
185	Temporary Facilities			
186	Misc. Deferred Debits	F-11		
187	Research & Development Expenditures			
190	Accumulated Deferred Income Taxes			
	Total Deferred Debits		122,681	134,949
	TOTAL ASSETS AND OTHER DEBITS		$2,491,826	$2,551,822

NOTES TO THE BALANCE SHEET

The space below is provided for important notes regarding the balance sheet.

Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

INSTRUCTION: Do Not Enter data on this page until all reference pages are complete.

COMPARATIVE BALANCE SHEET - EQUITY CAPITAL AND LIABILITIES

ACCT. NO. (a)	ACCOUNT NAME (b)	REF. PAGE (c)	CURRENT YEAR (d)	PREVIOUS YEAR (e)
	EQUITY CAPITAL			
211	Other Paid-In Capital			
214-215	Retained Earnings	F-14	892,367	862,225
	Total Equity Capital		892,367	862,225
	LONG-TERM DEBT			
221	Bonds	F-15	1,125,000	1,215,000
222	Reacquired Bonds			
223	Advances from Associated Entities	F-15		
224	Other Long-Term Debt	F-14		
	Total Long-Term Debt		1,125,000	1,215,000
	CURRENT AND ACCRUED LIABILITIES			
231	Accounts Payable			
232	Notes Payable	F-13		
233	Accounts Payable to Associated Entities	F-13		
234	Notes Payable to Associated Entities	F-13		
235	Customer Deposits		60,702	60,942
236	Accrued Taxes	F-16	1,857	1,755
237	Accrued Interest	F-17		
238	Accrued Dividends			
239	Matured Long-Term Debt			
240	Matured Interest			
241	Miscellaneous Current and Accrued Liabilities	F-18		
	Total Current and Accrued Liabilities		62,559	62,697
	DEFERRED CREDITS			
251	Unamortized Premium on Debt	F-12		
252	Advances for Construction	F-18		
253	Other Deferred Credits		147,537	147,537
	Total Deferred Credits		147,537	147,537
	OPERATING RESERVES			
261	Property Insurance Reserve			
262	Injuries and Damages Reserve			
263	Pensions and Benefits Reserve			
265	Miscellaneous Operating Reserves			
	Total Operating Reserves			
	CONTRIBUTIONS IN AID OF CONSTRUCTION			
271	Contributions In Aid of Construction	F-19	264,363	264,363
272	Accumulated Amortization of Contributions In Aid of Construction	F-20		
	Total Net Contributions In Aid of Construction		264,363	264,363
	TOTAL EQUITY CAPITAL AND LIABILITIES		$2,491,826	$2,551,822

Charlestown Water Utility
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INSTRUCTION: Do Not Enter data on this page until all reference pages are complete.

COMPARATIVE OPERATING STATEMENT

ACCT. NO. (a)	ACCOUNT NAME (b)	REF. PAGE (c)	CURRENT YEAR (d)	PREVIOUS YEAR (e)
	UTILITY OPERATING INCOME			
400	*Operating Revenues*	W-1	$750,137	$720,601
401	Operating Expenses	W-2	583,086	588,638
403	Depreciation Expense	F-6, F-20	53,494	53,494
406	Amortization of Utility Plant Acquisition Adjustment			
407	Amortization Expense	F-6		
408.11	Property Taxes or PILT			
408.12	Payroll Taxes		9,221	8,845
408.13	Other Taxes and Licenses		9,916	9,871
408.1-408.2	Taxes Other Than Income, unless specified above			
	Utility Operating Expenses		655,716	660,848
	Net Operating Income		94,420	59,753
413	Income From Utility Plant Leased to Others			
414	Gains (Losses) From Disposition of Utility Property			
	Total Utility Operating Income		94,420	59,753
	OTHER INCOME AND DEDUCTIONS			
415	Revenues From Merchandising, Jobbing and Contract Work			
416	Costs and Expenses of Merchandising, Jobbing and Contract Work			
419	Interest and Dividend Income			
421	Nonutility Income			
426	Miscellaneous Nonutility Expenses			
	Total Other Income and Deductions			
	TAXES APPLICABLE TO OTHER INCOME			
408.20	Taxes Other Than Income, Other Income & Ded	F-16		
	Total Taxes Applicable To Other Income			
	INTEREST EXPENSE			
427	Interest Expense	F-17	52,011	55,521
428	Amortization of Debt Discount & Expense	F-12	12,268	12,268
429	Amortization of Premium on Debt	F-12		
	Total Interest Expense		64,279	67,789
	EXTRAORDINARY ITEMS			
433	Extraordinary Income			
434	Extraordinary Deductions			
	Total Extraordinary Items			
	NET INCOME		$30,142	($8,036)

Charlestown Water Utility
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DO NOT ENTER DATA

CASH FLOW STATEMENT

	Ref. Page		Curent Year
Beginning Cash Balance	F-1(a)		$ 86,134
Beginning Other Cash Equivalents			
Special Deposits	F-1(a)	144,774	
Other Special Deposits	F-1(a)		
Working Funds	F-1(a)		
Temporary Cash Investments	F-1(a)		
Total Other Beginning Other Cash Equivalents			144,774
Total Beginning Cash & Cash Equivalents			$ 230,908
Net Income	F-3		30,142
Depreciation & Amortization	F-1(a)		50,094
Acquisition Adjustment Amortization	F-1(a)		
Other Changes in Retained Earnings	F-2		
Cash Flows from Operations			
Decrease (Increase) in Accounts Receivable	F-1(a)		(3,913)
Decrease (Increase) in Accounts and Notes Receivable from Associated Entities	F-1(a)		
Decrease (Increase) in Materials and Supplies Inventory	F-1(a)		
Decrease (Increase) in Prepayments	F-1(a)		
Decrease (Increase) in Other Current and Accrued Assets	F-1(a)		
Increase (Decrease) in Accounts Payable	F-2		
Increase (Decrease) in Notes Payable	F-2		
Increase (Decrease) in Accounts and Notes Payable from Associated Entities	F-2		
Increase (Decrease) Customer Deposits	F-2		(240)
Increase (Decrease) in Other Current and Accrued Liabilities	F-2		102
Decrease (Increase) in Deferred Debits	F-1(b)		12,268
Increase (Decrease) in Deferred Credits	F-2		
Increase (Decrease) in Operating Reserves	F-2		
Cash Flows from Operations			88,453
Cash Flows from Investing Activities			
Investment in Utility Plant	F-1(a)		3,400
Investment in Non-Utility Property	F-1(a)		
CIAC Additions (Net of Amortization, if any)	F-2		
Other Investments	F-1(a)		240
Cash Flows from Investing Activities			3,640
Cash Flows from Financing Activities			
Bonds	F-2		(90,000)
Reacqured Bonds	F-2		
Advances From Associated Entities	F-2		
Paid-in Capital increase (Decrease)	F-2		
Other Long Term Debt	F-2		
Cash Flows from Financing Activities			(90,000)
Change in Cash & Cash Equivalents			$ 2,093
Ending Other Cash & Cash Equivalents			$ 233,001
Less: Special Deposits	F-1(a)	142,375	
Less: Other Special Deposits	F-1(a)		
Less: Working Funds	F-1(a)		
Less: Temporary Cash Investments	F-1(a)		
Total Other Ending Other Cash Equivalents			(142,375)
Ending Cash Balance			$ 90,626

(0)

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Charlestown Water Utility
NAME OF UTILITY

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PERIODIC REVIEW

Line No.		Per Calendar Year 2016	Last Approved Rate Case
	OPERATING SECTION		
1	Operating Revenues*	$750,137	
	REVENUE REQUIREMENTS		
2	Operating Expenses (include taxes, not depreciation)	583,086	
3	Debt Service (1)		
4	Debt Service Reserve (2)		
5	Extensions & Replacements (3)		
6	Working Capital (4) (if allowed in last rate case)		
7	Less: Interest Income		
8	Total Revenue Requirements (Lines 2 through 7)	$583,086	
9	Excess or (Deficit) Revenues (Line 1 less Line 8)	$167,051	
10	Percent of Excess or (Deficit) (Line 9 divided by Line 1)	22.27%	

**Pursuant to Indiana Code § 8-1-31.5-17, if utility serves 5,000 customers or more, actual revenues for the calendar year and revenues approved in the utility's most recent rate case must be provided.*

Question:

Last Rate Case Cause Number: _____

Date of Order: _____

(1) DEBT SERVICE - Three or five year average principal and interest payments (Please detail)

(2) DEBT SERVICE RESERVE (Not to exceed the maximum annual debt service payment less amount already funded, divided over three or five years depending on the life of rates)

(3) EXTENSIONS & REPLACEMENTS - Use a three or five year capital improvement plan or the sum of historical plant additions for the last three or five calendar years, less CIAC & debt used to fund plant additions; then average.) (Please detail)

(4) WORKING CAPITAL

Current year operation and maintenance expenses (Do not include taxes or depreciation)	
Less: Fuel or power purchased	
Purchased Water (if applicable)	
Total Working Capital Expenses	
Divide by: 45 day factor	8
Total Working Capital	
Less: Cash on hand	90,626
Working funds	
Temporary Cash Investments	
Working Capital Need (don't include if number is negative)	($90,626)

Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

UTILITY PLANT (ACCTS. 101-106)

ACCT NO. (a)	(b)	REF. PAGE (c)	AMOUNT (d)
	Plant Accounts:		
101	Utility Plant In Service	W-3(b)	$7,722,741
102	Utility Plant Leased to Others		
103	Property Held for Future Use		
104	Utility Plant Purch. or Sold		
105	Construction Work In Progress		
106	Completed Construction Not Classified		
	Total Utility Plant		$7,722,741

UTILITY PLANT ACQUISITION ADJUSTMENTS (ACCTS. 114-115)

Report each acquisition adjustment and related accumulated amortization separately. For any acquisition adjustment approved by the Commission, include the Order number.

(a)	TOTAL (b)
Acquisition Adjustments (114):	
Total Plant Acquisition Adjustments	
Accumulated Amortization (115):	
Total Accumulated Amortization	
Net Acquisition Adjustments	

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ACCUMULATED DEPRECIATION (ACCT. 108)

(a)	AMOUNT (b)
Balance first of year	$5,647,270
Credit during year:	
Accruals charged:	
to Account 108.1	53,494
to Account 108.2	
to Account 108.3	
Accruals charged other accounts (specify)	
Salvage	
Other credits (specify)	
Total credits	53,494
Debits during the year:	
Book cost of plant retired	
Cost of removal	
Other debits (specify) retired printer	3,400
Total debits	3,400
Balance end of year	$5,697,364

ACCUMULATED AMORTIZATION (ACCT. 110)

(a)	AMOUNT (b)
Balance first of year	
Credits during year:	
Accruals charged:	
to Account 110.1	
to Account 110.2	
Other credits (specify)	
Total credits	
Debits during year:	
Book cost of plant retired	
Other debits (specify)	
Total debits	
Balance end of year	

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NONUTILITY PROPERTY (ACCT. 121)

Report separately each item of property with a book cost of $25,000 or more included in Account 121. Other items may be grouped by classes of property.

DESCRIPTION (a)	BEGINNING YEAR BALANCE (b)	ADDITIONS (c)	(RETIREMENTS) (d)	ENDING YEAR BALANCE (e)
Total Nonutility Property.....				

SPECIAL DEPOSITS (ACCTS. 132-133)

Report hereunder all special deposits carried in Accounts 132 and 133.

DESCRIPTION OF SPECIAL DEPOSITS (a)	YEAR END BOOK COST (b)
SPECIAL DEPOSITS (ACCT. 132):	
B&I cash	0
debt service reserve	142,375
Total Special Deposits.....	142,375
OTHER SPECIAL DEPOSITS (ACCT. 133):	
Total Other Special Deposits.....	

Charlestown Water Utility
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INVESTMENTS AND SPECIAL FUNDS (ACCTS. 123 - 127)

Report hereunder all investments and special funds carried in Accounts 123 through 127.

DESCRIPTION OF SECURITY OR SPECIAL FUND (a)	FACE OR PAR VALUE (b)	YEAR END BOOK COST (c)
INVESTMENT IN ASSOCIATED COMPANIES (ACCT. 123):		
none		
Total Investment In Associated Companies		
UTILITY INVESTMENTS (ACCT. 124):		
none		
Total Utility Investments		
OTHER INVESTMENTS (ACCT. 125):		
none		
Total Other Investments		
SPECIAL FUNDS (ACCTS. 126 & 127):		
customer deposits cash		19,702
customer deposits investment		41,000
Total Special Funds		$60,702

Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

ACCOUNTS AND NOTES RECEIVABLE - NET (ACCTS. 141-144)

Report hereunder all accounts and notes receivable included in Accounts 141, 142 and 144. Amounts included in Accounts 142 and 144 should be listed individually.

DESCRIPTION (a)		AMOUNT (b)
Accounts Receivable:		
Customer Accounts Receivable (Acct. 141):		
Water	$53,696	
Other		
Total Customer Accounts Receivable		$53,696
Other Accounts Receivable (Acct. 142):		
allowance for doubtful account	(3,631)	
Total Other Accounts Receivable		(3,631)
Notes Receivable (Acct. 144):		
Total Notes Receivable		
Total Accounts and Notes Receivable		50,065
Accumulated Provision for Uncollectible Accounts (Acct. 143):		
Balance first of year		
Add: Provision for uncollectibles for current year		
Collections of accounts previously written off		
Utility accounts		
Others		
Total Additions		
Deduct accounts written off during year:		
Utility Accounts		
Other		
Total accounts written off		
Balance end of year		
Total Accounts and Notes Receivable - Net		$50,065

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ACCOUNTS RECEIVABLE FROM ASSOCIATED ENTITIES (ACCT. 145)

Report each account receivable from associated companies separately.

DESCRIPTION (a)	AMOUNT (b)
Total	

NOTES RECEIVABLE FROM ASSOCIATED ENTITIES (ACCT. 146)

Report each note receivable from associated companies separately.

DESCRIPTION (a)	INTEREST RATE (b)	AMOUNT (c)
Total		

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MATERIALS AND SUPPLIES (ACCTS. 151 - 153)

DESCRIPTION (a)	TOTAL (b)
Plant Material and Supplies (Acct. 151)	
Merchandise (Acct. 152)	
Other Materials and Supplies (Acct. 153)	
Total Materials and Supplies	

PREPAYMENTS (ACCT. 162)

DESCRIPTION (a)	TOTAL (b)
Prepaid Insurance	
Prepaid Rents	
Prepaid Interest	
Prepaid Taxes	
Other Prepayments (Specify):	
Total Prepayments	

MISCELLANEOUS DEFERRED DEBITS (ACCT. 186)

DESCRIPTION (a)	TOTAL (b)
Miscellaneous Deferred Debits (Acct. 186):	
Deferred Rate Case Expense (Acct. 186.1)	
Other Deferred Debits (Acct. 186.2) (Provide detail below)	
Total Miscellaneous Deferred Debits	

Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

UNAMORTIZED DEBT DISCOUNT AND EXPENSE AND PREMIUM ON DEBT (ACCTS. 181 & 251)

Report the net discount and expense or premium separately for each security issue.

DESCRIPTION (a)	AMOUNT WRITTEN OFF DURING YEAR (b)	YEAR END BALANCE (c)
Unamortized Debt Discount and Expense (Acct. 181):	$12,268	$122,681
Total Unamortized Debt Discount and Expense	12,268	122,681
Unamortized Premium on Debt (Acct. 251):		
Total Unamortized Premium on Debt		

EXTRAORDINARY PROPERTY LOSSES (ACCT. 182)

Report each item separately.

DESCRIPTION (a)	AMOUNT (b)
Extraordinary Property Losses (Acct. 182):	
Total Extraordinary Property Losses	

Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

NOTES PAYABLE (ACCTS. 232 and 234)

DESCRIPTION (a)	NOMINAL DATE OF ISSUE (b)	DATE OF MATURITY (c)	INTEREST		PRINCIPAL AMOUNT PER BALANCE SHEET (f)
			RATE (d)	FREQUENCY OF PAYMENT (e)	
Account 232 - Notes Payable:					
Total Account 232					
Account 234 - Notes Payable to Associated Entities:					
Total Account 234					

ACCOUNTS PAYABLE TO ASSOCIATED ENTITIES (ACCT. 233)

Report each account payable separately.

DESCRIPTION (a)	AMOUNT (b)
Total	

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Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

OTHER LONG TERM DEBT (ACCT. 224)

Description of Obligation (Including Nominal Date of Issue and Date of Maturity) (a)	INTEREST		PRINCIPAL AMOUNT PER BALANCE SHEET (d)
	RATE (b)	FREQUENCY OF PAYMENT (c)	
Total			

STATEMENT OF RETAINED EARNINGS

ACCT. NO. (a)	DESCRIPTION (b)	AMOUNT (c)
215	Unappropriated Retained Earnings:	
	Balance beginning of year	$862,225
	Changes to account:	
439	Adjustments to Retained Earnings (requires Commission approval prior to use):	
	Credits (provide detail):	
	Total Credits	
	Debits (provide detail):	
	Total Debits	
435	Balance Transferred From Income	30,142
436	Appropriations of Retained Earnings:	
	Total Appropriations of Retained Earnings	
	Balance end of year	892,367
214	Appropriated Retained Earnings (state balance and purpose of each appropriated amount at year end):	
	Balance Beginning of Year	
	Changes To Account:	
	Balance End of Year	
	Total Retained Earnings	$892,367
Notes to Statement of Retained Earnings:		

Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

BONDS (ACCT. 221)

Description of Obligation (Including Nominal Date of Issue, Date of Maturity and Order number granting financing authority) (a)	INTEREST		PRINCIPAL AMOUNT PER BALANCE SHEET (d)
	RATE (b)	FREQUENCY OF PAYMENT (c)	
waterworks revenue bond	13-4.38%	semiannual	1,125,000
Indiana Bond Bank			
Issued 12/15/2006			
matures 1/1/27			
Total			$1,125,000

ADVANCES FROM ASSOCIATED ENTITIES (ACCT. 223)

Report each advance separately.

DESCRIPTION (a)	AMOUNT (b)
Total	

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ACCRUED TAXES (ACCT. 236)

ACCT. NO.	DESCRIPTION (a)	AMOUNT (b)
	Balance beginning of year:	$1,755
	Accruals Charged	
	Taxes Other Than Income:	
408.10	IURC Fee	
408.11	Property Taxes	
408.12	Payroll Taxes	9,221
408.13	Utility Receipts Tax	9,916
408.13	Other Taxes & Licenses	
236.00	Sales Tax and Employee Portion of Payroll Taxes	41,223
	Taxes App.To Other Income & Deductions:	
408.20	Taxes Other Than Income	
	Total Accrued Taxes	60,360
	Taxes Paid During Year	
	Taxes Other Than Income:	
408.10	IURC Fee	
408.11	Property Taxes	
408.12	Payroll Taxes	9,221
408.13	Utility Receipts Tax	9,916
408.13	Other Taxes & Licenses	
236.00	Sales Tax	41,121
	Taxes App.To Other Income & Deductions:	
408.20	Taxes Other Than Income	
	Total Paid Taxes	60,257
	Balance End of Year	$1,857

Charlestown Water Utility
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ACCRUED INTEREST (ACCT. 237)

DESCRIPTION OF DEBT (a)	BALANCE BEGINNING OF YEAR (b)	INTEREST ACCRUED DURING YEAR		INTEREST PAID DURING YEAR (e)	BALANCE END OF YEAR (f)
		ACCT. DEBIT (c)	AMOUNT (d)		
Account No. 237.1 - Accrued Interest on Long Term Debt:			$52,011	$52,011	
Total Account 237.1			52,011	52,011	
Account 237.2 - Accrued Interest on Other Liabilities					
Total Account No. 237.2					
Total Account No. 237			$52,011	$52,011	

REGULATORY COMMISSION EXPENSE - AMORTIZATION OF RATE CASE EXPENSE (ACCT. 665 and 666)

DESCRIPTION OF CASE (DOCKET NO.) (a)	EXPENSE INCURRED DURING YEAR (b)	AMOUNT TRANSFERRED TO DEFERRED RATE CASE EXP. (ACCT. NO. 186.1) (c)	CHARGED OFF DURING YEAR	
			ACCT. (d)	AMOUNT (e)
Total				

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Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

MISCELLANEOUS CURRENT AND ACCRUED LIABILITIES (ACCT. 241)

DESCRIPTION (a)	BALANCE END OF YEAR (b)
Total Miscellaneous Current And Accrued Liabilities	

ADVANCES FOR CONSTRUCTION (ACCT. 252)

DESCRIPTION (a)	TOTAL (b)
Balance beginning of year	
Add credits during year:	
Cash receipts	
Non-cash receipts	
Total credits	
Less: Cash Refunds	
Expired Customer Advances for Construction transferred to CIAC	
Total debits	
Balance end of year	

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Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

CONTRIBUTIONS IN AID OF CONSTRUCTION (ACCT. 271)

DESCRIPTION (a)	AMOUNT (b)
Balance beginning of year	$264,363
Add credits during year:	
Cash Contributions received from System Development Charges, Main Extensions and Customer Connection Charges (See Below)	
Property Contributions received from Developer or Contractor Agreements (See Following Page)	
Expired Customer Advances for Construction transferred to CIAC	
Total Credits	
Deduct Charges During Year	
Balance end of year	$264,363

CASH ADDITIONS TO CONTRIBUTIONS IN AID OF CONSTRUCTION RECEIVED FROM SYSTEM DEVELOPMENT CHARGES, MAIN EXTENSION CHARGES AND CUSTOMER CONNECTIONS CHARGES RECEIVED DURING THE YEAR

DESCRIPTION OF CHARGE (a)	NUMBER OF CONNECTIONS (b)	CHARGE PER CONNECTION (c)	AMOUNT (d)
Total Credits From System Development Charges, Main Extension Charges and Customer Connection Charges			
Note: The total amount here should agree with Cash Contributions reported above.			

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Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

ADDITIONS TO CONTRIBUTIONS IN AID OF CONSTRUCTION RECEIVED FROM ALL CUSTOMER, DEVELOPER OR CONTRACTOR AGREEMENTS FROM WHICH PROPERTY WAS RECEIVED DURING THE YEAR

DESCRIPTION (a)	AMOUNT (b)
Total Credits From All Customer, Developer or Contractor Agreements From Which Cash Or Property Was Received	
Note: The total amount here should agree with Property Contributions on Page F-19.	

ACCUMULATED AMORTIZATION OF CIAC (ACCT. 272)

DESCRIPTION (a)	AMOUNT (b)
Balance beginning of year	
Debits during year (specify):	
Total Debits	
Credits during year (specify):	
Total Credits	
Balance end of year	

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NAME OF UTILITY	YEAR OF REPORT December 31, 2016

ITEMIZED UNIT COSTS

INSTRUCTIONS: Itemized expenses per unit, in accordance with the following table, are specifically called for by I.C. 8-1-2-26. The unit costs called for in the last column are the "Cost per 1,000 gallons of water pumped." Do not use this page for any purpose except to show unit cost.

(conversion 1cubic foot (cf) = 7.48 gallons)

Total number gallons of water pumped during year: _____

Items upon which costs per unit are calculated. Make no changes. Supply information as called for.	**Amount** (a)	**Cost per 1,000 gallons pumped** (b)
Depreciation		
Salaries		
Wages		
Legal Expenses		
Taxes		
Rentals		
Materials used on repairs		
Fuel or power purchased		
Miscellaneous		
Total operating expenses		
Total Operating Revenues	750,137	
Total Operating Expenses		
Net Operating Revenues	750,137	
Non Operating Revenues		
Gross Income (Deficit)	750,137	
Other Receipts		
Interest Expense		
Other Deductions		
Net Income (Deficit)	$750,137	

WATER OPERATION SECTION

Charlestown Water Utility
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WATER OPERATING REVENUE

ACCT. NO. (a)	(b)	BEGINNING YEAR NUMBER CUSTOMERS (c)	YEAR END NUMBER CUSTOMERS (d)	AMOUNTS (e)
	Operating Revenues:			
460	***Unmetered Water Revenue***			
	Metered Water Revenue:			
461.1	Metered Sales to Residential Customers	2,484	2,517	463,614
461.2	Metered Sales to Commercial Customers	126	133	85,674
461.3	Metered Sales to Industrial Customers	23	24	51,707
461.4	Metered Sales to Public Authorities	201	202	62,208
461.5	Metered Sales to Multiple Family Dwellings	24	23	32,718
	Total Metered Sales	2,858	2,899	695,921
	Fire Protection Revenue:			
462.1	Public Fire Protection			22,226
462.2	Private Fire Protection			
	Total Fire Protection Revenue			22,226
464	Other Sales to Public Authorities			
465	Sales to Irrigation Customers			
466	Sales for Resale			
467	Interdepartmental Sales			
	Total Sales of Water	2,858	2,899	718,147
	Other Water Revenues:			
470	Late Payment Charges			6,104
471	Miscellaneous Service Revenues			(8,379)
472	Rents from Water Property			
473	Interdepartmental Rents			
474	Other Water Revenues			34,265
	Total Other Water Revenues			31,990
	Total Water Operating Revenues*			$750,137

*Total Water Operating Revenue should equal Water Operating Revenues shown on F-3. NOTE: F-3 - Water Operating Revenues contains a formula linked to Total Water Operating Revenue on this page.

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

COMPARATIVE DETAIL OF WATER OPERATION AND MAINTENANCE EXPENSES

ACCT. NO. (a)	ACCOUNT NAME (b)	CURRENT YEAR (c)	.1 SOURCE OF SUPPLY AND EXPENSES - OPERATIONS (d)	.2 SOURCE OF SUPPLY AND EXPENSES - MAINTENANCE (e)
601	Salaries & Wages - Employees	$123,814		
603	Salaries & Wages - Officers, Directors and Majority Stockholders			
604	Employee Pensions and Benefits	13,549		
610	Purchased Water	64,680		
615	Purchased Power	64,680		
616	Fuel for Power Production	405		
618	Chemicals	49,963		
620	Materials and Supplies	59,944		
630	Contractual Services - Billing*	6,130		
631	Contractual Services - Engineering/Professional*	69,733		
632	Contractual Services - Accounting	400		
633	Contractual Services - Legal			
634	Contractual Services - Management Fees			
635	Contractual Services - Other/Testing*	5,516		
636	Contractual Services - Other	65,447		
640	Rents*			
641	Rental of Building/Real Property			
642	Rental of Equipment			
650	Transportation Expenses			
655	Insurance*			
656	Insurance - Vehicle			
657	Insurance - General Liability	5,000		
658	Insurance - Workman's Compensation	4,000		
659	Insurance - Other			
660	Advertising Expense			
665	Regulatory Commission Expense*			
666	Regulatory Commission Expenses - Amortization of Rate Case Expense			
667	Regulatory Commission Expenses - Other			
670	Bad Debt Expense			
675	Miscellaneous Expenses	49,826		
	Total Operation and Maintenance Expenses **	$583,086		

*For Class C only. Class C utilities use Account 635 for Contractual Services-Testing and Account 636 for Contractual Services-Other.

**Total Operation and Maintenance Expenses should equal Water Utility Operating Expenses shown on page F-3.

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

WATER OPERATION AND MAINTENANCE EXPENSE ACCOUNT MATRIX

Acct. No.	.3 WATER TREATMENT EXPENSES - OPERATIONS (f)	.4 WATER TREATMENT EXPENSES - MAINTENANCE (g)	.5 TRANSMISSION & DISTRIBUTION EXPENSES - OPERATIONS (h)	.6 TRANSMISSION & DISTRIBUTION EXPENSES - MAINTENANCE (i)	.7 CUSTOMER ACCOUNTS EXPENSES (j)	.8 ADMINISTRATIVE & GENERAL EXPENSES (k)
601						
603						
604						
610						
615						
616						
618						
620						
630						
631						
632						
633						
634						
635						
636						
640						
641						
642						
650						
656						
655						
657						
658						
659						
660						
665						
666						
667						
670						
675						

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

WATER UTILITY PLANT ACCOUNTS

ACCT. NO. (a)	ACCOUNT NAME (b)	PREVIOUS YEAR (c)	ADDITIONS (d)	(RETIREMENTS) (e)*
301	Organization			
302	Franchises			
303	Land and Land Rights	2,725		
304	Structures and Improvements	158,995		
305	Collecting and Impounding Reservoirs			
306	Lake, River and Other Intakes			
307	Wells and Springs			
308	Infiltration Galleries and Tunnels			
309	Supply Mains			
	Cast Iron or Ductile Iron			
	PVC			
	Other			
310	Power Generation Equipment			
311	Pumping Equipment	19,300		
320	Water Treatment Equipment	233,233		
330	Distribution Reservoirs and Standpipes	1,286,250		
331	Transmission and Distribution Mains			
	Cast Iron or Ductile Iron			
	PVC	1,020,786		
	Other	4,470,725		
333	Services			
334	Meters and Meter Installations			
	Automatic			
	Other	275,735		
335	Hydrants			
336	Backflow Prevention Devices			
339	Other Plant and Miscellaneous Equipment			
340	Office Furniture and Equipment	3,400		
	Computers			
341	Transportation Equipment	81,509		
342	Stores Equipment			
343	Tools, Shop and Garage Equipment	3,000		
344	Laboratory Equipment			
345	Power Operated Equipment	151,288		
346	Communication Equipment	19,195		
347	Miscellaneous Equipment			
348	Other Tangible Plant			
	Total Water Utility Plant In Service	$7,726,141		

*Enter retirements as negative entries

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

WATER UTILITY PLANT MATRIX

Acct. No.	CURRENT YEAR (f)	.1 INTANGIBLE PLANT (g)	.2 SOURCE OF SUPPLY AND PUMPING PLANT (h)	.3 WATER TREATMENT PLANT (i)	.4 TRANSMISSION AND DISTRIBUTION PLANT (j)	.5 GENERAL PLANT (k)
301						
302						
303	2,725			$1,725	$1,000	
304	158,995		150,000	8,995		
305						
306						
307						
308						
309						
310						
311	19,300		19,300			
320	233,233			233,233		
330	1,286,250				1,286,250	
331						
	1,020,786				1,020,786	
	4,470,725				4,470,725	
333						
334						
	275,735				275,735	
335						
336						
339						
340	3,400					3,400
341	81,509					81,509
342						
343	3,000					3,000
344						
345	151,288					151,288
346	19,195					19,195
347						
348						
	$7,726,141		$169,300	$243,953	$7,054,496	$258,392

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

ADDITIONS/(RETIREMENTS) DETAIL
Provide the following information for each addition or retirement greater than $10,000. Please insert additional rows where necessary.

ACCT. NO. (a)	FUNCTION BY SUB-ACCOUNT (b)	TOTAL ADDITIONS/ (RETIREMENTS) (c)	DESCRIPTION OR TYPE OF ASSET (d)	IN SERVICE DATE (e)	RETIREMENT DATE* (f)	AMOUNT (g)
301						
302						
303						
304						
305						
306						
307						
308						
309						
310						
311						
320						
330						
331						
333						
334						
335						
336						
339						
340		(3,400)	Printer		1/1/16	(3,400)
341						
342						
343						
344						
345						
346						
347						
348						
		($3,400)				($3,400)

*Please provide the reason for an asset retirement, if it occurred prior to its expected useful life.
NOTE: In-service dates for each retirement should be provided.

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

BASIS FOR WATER DEPRECIATION CHARGES

ACCT. NO. (a)	ACCOUNT NAME (b)	AVERAGE SERVICE LIFE IN YEARS (c)	AVERAGE NET SALVAGE IN PERCENT (d)	DEPRECIATION RATE APPLIED IN PERCENT (100% - d) / c (e)
304	Structures and Improvements	20		5.00%
305	Collecting and Impounding Reservoirs			
306	Lake, River and Other Intakes			
307	Wells and Springs	50		2.00%
308	Infiltration Galleries and Tunnels			
309	Supply Mains			
	Cast Iron or Ductile Iron			
	PVC			
	Other			
310	Power Generation Equipment			
311	Pumping Equipment	10		10.00%
320	Water Treatment Equipment			
330	Distribution Reservoirs and Standpipes	50		2.00%
331	Transmission and Distribution Mains			
	Cast Iron or Ductile Iron			
	PVC	50		2.00%
	Other	50		2.00%
333	Services			
334	Meters and Meter Installations			
	Automatic			
	Other			
335	Hydrants	5		20.00%
336	Backflow Prevention Devices			
339	Other Plant and Miscellaneous Equipment			
340	Office Furniture and Equipment	10		10.00%
	Computers			
341	Transportation Equipment	10		10.00%
342	Stores Equipment			
343	Tools, Shop and Garage Equipment	10		10.00%
344	Laboratory Equipment			
345	Power Operated Equipment	10		10.00%
346	Communication Equipment			
347	Miscellaneous Equipment	10		10.00%
348	Other Tangible Plant			
	Water Plant Composite Depreciation Rate *			

NOTE: If Applicable, provide the Cause No. Depreciation Rate was authorized

* If depreciation rates prescribed by this Commission are on a total composite basis, entries should be made in this line only.

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

ANALYSIS OF ENTRIES IN WATER ACCUMULATED DEPRECIATION

ACCT. NO. (a)	ACCOUNT NAME (b)	RESERVE BALANCE AT BEGINNING OF YEAR (c)	ACCRUALS BOOKED TO RESERVE (d)	SALVAGE AND INSURANCE (e)	OTHER CREDITS TO RESERVE * (f)	TOTAL CREDITS TO RESERVE (d+e+f) (g)
304	Structures & Improvements...	$68,995	$7,500			$7,500
305	Collecting and Impounding					
	Reservoirs.....					
306	Lake, River & Other Intakes..					
307	Wells and Springs.....					
308	Infilt. Galleries & Tunnels.....					
309	Supply Mains.....					
	Cast Iron or Ductile Iron					
	PVC					
	Other					
310	Power Generation Equip.....					
311	Pumping Equipment.....	19,300				
320	Water Treatment Equip.....	5,007	556			556
330	Distribution Reservoirs and					
	Standpipes.....	287,324	24,742			24,742
331	Trans. and Distrib. Mains.....					
	Cast Iron or Ductile Iron					
	PVC	262,352	20,416			20,416
	Other	4,470,726				
333	Services.....					
334	Meters & Meter Installation....	275,735				
	Automatic					
	Other					
335	Hydrants.....					
336	Backflow Prevention Devices					
339	Other Plant and Misc.					
	Equipment.....					
340	Office Furniture and Equip.....					
	Computers					
341	Transportation Equipment.....	81,508				
342	Stores Equipment.....					
343	Tools, Shop, Garage Equip...	3,000				
344	Laboratory Equipment.....					
345	Power Operated Equipment..	151,288				
346	Communication Equipment...	18,636	280			280
347	Miscellaneous Equipment.....					
348	Other Tangible Plant.....					
	Totals.....	$5,643,870	$53,494			$53,494

* Specify nature of transaction.
Use ( ) to denote reversal entries.

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

ANALYSIS OF ENTRIES IN WATER ACCUMULATED DEPRECIATION (Cont'd)

ACCT. NO.	PLANT RETIRED CHARGED TO RESERVE (h)	ASSOCIATED COST OF REMOVAL (i)	OTHER CHARGES TO RESERVE (j)	TOTAL CHARGES TO RESERVE (h+i+j) (k)	RESERVE BALANCE AT END OF YEAR (c+g-k) (l)
304					$76,495
305					
306					
307					
308					
309					
310					
311					19,300
320					5,563
330					312,066
331					
					282,767
					4,470,726
333					
334					275,735
335					
336					
339					
340					
341					81,508
342					
343					3,000
344					
345					151,288
346					18,916
347					
348					
					$5,697,364

Charlestown Water Utility
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YEAR OF REPORT
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PUMPING AND PURCHASED WATER STATISTICS

INSTRUCTIONS: Enter Number "1" if the units of measurement are 100 cu. ft.or "2" if the units of measurement are 1,000 gallons: 2

Unit of measurement is 1,000 gallons

(a)	WATER PURCHASED FOR RESALE (Omit 000's) (b)	WATER PUMPED FROM SOURCES OTHER THAN PURCHASED WATER (Omit 000's) (c)	TOTAL WATER PUMPED AND PURCHASED (Omit 000's) [b+c] (d)	WATER SOLD TO CUSTOMERS (Omit 000's) (e)
January		230,730.00	230,730.00	158,153.00
February		210,020.00	210,020.00	164,756.00
March		231,000.00	231,000.00	159,533.00
April		225,850.00	225,850.00	153,288.00
May		221,610.00	221,610.00	150,265.00
June		236,000.00	236,000.00	196,737.00
July		228,770.00	228,770.00	163,583.00
August		228,770.00	228,770.00	176,285.00
September		239,110.00	239,110.00	194,331.00
October		209,010.00	209,010.00	165,893.00
November		216,680.00	216,680.00	176,555.00
December		216,230.00	216,230.00	160,109.00
Total for year		2,693,780.00	2,693,780.00	2,019,488.000
Total Non-revenue Water ((d)-(e))				674,292.00
Less: Backwash water				
Main flushing				
Street cleaning/sewer flushing				
Fire fighting				
Other Authorized consumption				
Water Loss				674,292.000
% Water Loss				25.0%

If real losses are greater than 10%, please explain efforts the utility has taken to mitigate losses (i.e., leak detection survey, meter replacement or calibration, AWWA Water Audit Completed)

Does the utility currently maintain a database that identifies when, where and why a main break occurred on the system, the estimated water lost and the cost of repair? Yes or No: no

If yes, please provide the number of main breaks that occurred during the year and the estimated lost water.

If no, when does the utility plan to implement such a database? 1/1/2018

Do water interconnections exist (Y/N)? y **Please fill out table below:**

Customer	Buy (B) or Sell (S)	Point of Delivery	Size of Connection (meter)	Contractual Availability (gallons) Omit (000's)
Marysville-Otisco-Nabb	s	Hwy 3-Tunnel Mill		n/a
		Chas-Memphis-Vie	4-6"	
Sellersburg	s	Hwy 403	8"	n/a

Charlestown Water Utility
NAME OF UTILITY

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WELLS AND WELL PUMPS

(a)	(b)	(c)	(d)	2
Year Constructed	1963	1963	1977	1977
Types of Well Construction				
and Casing	Tubular	Tubular	Tubular	Tubular
Rated Capacity				
Actual Capacity				
Depth of Wells	99ft	70ft	60ft	74ft
Diameters of Wells	16ft	16ft	16ft	16ft
Pump - GPM	584	460	352	521
Motor - HP	75	200	150	75
Yields of Wells in GPD	864,000	1,100,000	1,100,000	1,100,000
Auxiliary Power	n/a	n/a	n/a	n/a
Date Well was Last Tested	6/1/15	8/1/10	8/1/10	8/1/10
Date Well was Last Cleaned				

RESERVOIRS

(a)	(b)	(c)	(d)	(e)
Description (steel, concrete				
or pneumatic)	steel	steel	steel	
Capacity of Tank	1,500,000	500,000	258,000	
Ground or Elevated	ground	elevated	elevated	
Date Installed	5/21/05	6/28/05	5/29/05	
Date Last Painted	1/1/11	1/1/06	unknown	

HIGH SERVICE PUMPING

(a)	(b)	(c)	(d)	(e)
Motors				
Manufacturer	lincoln	general electric		
Type	5300	5300		
Rated Horsepower	125	125		
Pumps				
Manufacturer	peerless	peerless		
Type	8ad	8ad		
Capacity in GPM	700	700		
Average Number of Hours				
Operated Per Day	6	6		
Auxiliary Power	n/a	n/a		

Charlestown Water Utility
NAME OF UTILITY

YEAR OF REPORT
December 31, 2016

2

SOURCE OF SUPPLY

List for each source of supply:	(a)	(b)	(c)
Name (NE Wellfield, Ohio River, etc.):.....	Charlestown well field		
Gallons per day of source.....	200,000		
Type of source.....	ground water/aquifer		

WATER TREATMENT FACILITIES

List for each water treatment facility:	(a)	(b)	(c)
Name.....	Charlestown Water Utility		
Type.....	duplex pump system		
Make.....	lincoln/GE		
Gallons per day capacity.....	2,000,000		
Method of measurement.....	meter		
Installation Date.....	unknown		
Describe process (filtration, chlorination, etc.):			

OTHER WATER SYSTEM INFORMATION

Furnish detailed information below. A separate page should be supplied where necessary.

1. Does the utility have an asset management plan? Yes No — yes
   If yes, does the plan cover the following categories?
   - 1a. Diagnostics and preventive maintenance? Yes No — no
   - 1b. Rehabilitation/replacement? Yes No — yes
   - 1c. Reactive Maintenance? Yes No — yes
   - 1d. If no, when does the utility plan to start implementation of an asset management program? — n/a
   - 1e. If no, would the utility like information to help facilitate such a plan? Yes No — n/a

2. What is the current need for system upgrading and/or expansion?
   transmission main upgrades, line looping, distribution upgrades

3. What are plans for future system upgrading and/or expansion?
   Prepare and implement a 5 year plan

4. Have questions 1 and 2 been discussed with an engineer?
   (If so, state name and address) yes
   Saegasser Engineering 88 W McClain Street Scottsburg, IN

5. Does utility participate in InWARN*? Yes or No — yes

*InWARN is Indiana's Water/Wastewater Agency Response Network formalized to deliver mutual aid following major emergencies.

6. Does utility have a Conservation Plan? yes

7. Enter utility's Public Water System ID# (PWSID#) IN5210003

8. If applicable, please provide the due date for utility's Phase II Wellhead Plan

9. If Phase II Wellhead Plan was due on or before December 31, 2014, has plan been submitted to IDEM for approval? Yes or No

Charlestown Water Utility NAME OF UTILITY	YEAR OF REPORT December 31, 2016

Directions: Complete this worksheet if utility serves fewer than 10,000 customers.

METERING TECHNOLOGY

2

TYPE OF METER - (R)adio Read, (M)anual, (T)ouch Pad, etc. (a)	CURRENT NUMBER ON SYSTEM (b)	NUMBER INSTALLED DURING THE YEAR (c)	OF THE NUMBER INSTALLED HOW MANY WERE REPLACEMENTS? (d)
Radio Read	2,800	200	200

1. Is raw water metered? _____
   If yes, please provide the last date meter was tested. _____
2. Is finished water metered? _____
   If yes, please provide the last date meter was tested. _____

TRANSMISSION AND DISTRIBUTION MAINS

Transmission Mains:			
Size (inches)	16		
Type of main (PVC, DI, CI, etc.)	DI		
Length of main (nearest ft.):			
Beginning of year	16,000		
Added during year	-		
Retired during year	-		
End of year	16,000		
Of the main added, what percentage was for replacement of pipe?			
Distribution Mains:			
Size (inches)	4	4 -8	8
Type of main (PVC, DI, CI, etc.)	AC,PVC,DI,CI	AC,PVC,DI,CI	AC,PVC,DI,CI
Length of main (nearest ft.):			
Beginning of year	52,272	225,456	13,200
Added during year			
Retired during year			
End of year	52,272	225,456	13,200
Of the main added, what percentage was for replacement of pipe?			

Performance Measures

Please provide the information requested. Note: the shaded areas are linked to information from the utility's Annual Report, thus, it is important that all information contained in the utility's Annual Report is accurate.

Customer Accounts per Full-time ("FT") Employee Equivalent

Number of Customers	2,899
Total number of Full-time Employee Equivalents	4
Customer Accounts per Employee	724.75

Customer Accounts per FT Contract Employee Equivalent

Number of Customers	2,899
Total number of Full-time Contract Employee Equivalents →	
Customer Accounts per Contract Employee	

Thousand Gallons per Day ("TGD") Water Delivered Per FT Employee Equivalent

Average TGD Sold	5,532.844
Total number of Full-time Employee Equivalents	4
Thousand Gallons per Day Water Delivered Per FT Employee Equivalent	1,383.211

Net Utility Plant in Service per Customer (including Contributed Plant)

Number of Customers	2,899
Net Utility Plant in Service	$ 2,025,377
Net Utility Plant in Service Per Customer	$ 698.65

Gross Utility Plant in Service per Customer (including Contributed Plant)

Number of Customers	2,899
Gross Utility Plant in Service	$ 7,722,741
Gross Utility Plant in Service Per Customer	$ 2,663.93

Net Utility Plant in Service per Thousand Gallons per Day ("TGD") Delivered (including Contributed Plant)

Average TGD Sold	5,532.844
Net Utility Plant in Service	$ 2,025,377
Net Utility Plant in Service Per TGD	$ 366.06

Gross Utility Plant in Service per Thousand Gallons per Day Delivered (including Contributed Plant)

Average TGD Sold	5,533
Gross Utility Plant in Service	$ 7,722,741
Gross Utility Plant in Service Per TGD	$ 1,395.80

Income Statement Item:	Per 1,000 Gallons
Operating Revenue	$ 0.37
Operating Expenses	$ 0.29
Net Operating Income	$ 0.05

Income Statement Item:	Per Customer
Operating Revenue	$ 258.76
Operating Expenses	$ 201.13
Net Operating Income	$ 32.57
Average Monthly Bill →	

Average Monthly Bill should be based on a residential customer that uses 5,000 gallons of water.

Current Ratio

Total Current Assets	$ 283,066
Total Current Liabilities	$ 62,559
Current Ratio	4.525

Long-Term Debt Per Customer

Number of Customers	2,899
Outstanding Long-Term Debt	$ 1,125,000
Long-Term Debt Per Customer	$ 388

Debt Service Coverage

Gross Revenue - Operation and Maintenance Expenses	$ 167,051
Enter the Sum of Annual Debt Service Principal + Interest →	
Debt Service Coverage	

Performance Measures (con't)

Days of Sales Outstanding

000065

Accounts Receivable		$ 50,065
Sales/365 days		$ 2,055
Days of Sales Outstanding		24
Bad Debt Expense as a Percent of Revenues		
Bad Debt Expense		
Total Operating Revenues		$ 750,137
Bad Debt Expense as a Percent of Revenues		
Training Hours per FT Employee Equivalent		
Enter Total of Qualified Formal Training Hours for all FT Employee Equivalents →		
Total number of Full-time Employee Equivalents		4.00
Training Hours Per Employee		
Training Hours per Equivalent FT Contract Employee		
Enter Total of Qualified Formal Training Hours for all FT Contract Employee Equivalents →		
Total number of Full-time Contract Employee Equivalents		
Training Hours Per Contract Employee		
Water Loss as a % of Water Sold		
Water Pumped and/or Purchased Less Accountable but Unbilled Water		2,693,780
Water Sold		2,019,488
Water Loss as a % of Water Sold		33.39%
System Renewal/Replacement Rate (%)		
Enter Actual Investment in Assets Replacement + Funds Reserved for Replacement →		
Gross Utility Plant in Service		$ 7,722,741
System Renewal/Replacement Rate (%)		
Water Source		
Annual Water Purchased (1,000's gallons)		
Annual Water Produced (1,000's gallons)	2,693,780	100.00%
Total Water Supply	2,693,780	100.00%
Cost Per 1,000 Gallons Purchased		#DIV/0!
Planned Maintenance Ratio		
Planned maintenance is performed based on a predetermined schedule. Corrective maintenance is in response to failure or from an asset no longer providing reliable service.		
Enter Planned Maintenance (hours) →		
Enter Corrective Maintenance (hours) →		
Planned Maintenance Ratio (hours)		
Density of Water Connections		
Feet of Distribution Main		290,928
Number of Customers		2,899
Feet of Main per Customer Served		100

How many boil water advisories were issued this year? _____

For each Maintenance Program listed below, provide the number of units on the Utility's System and the number of units tested, turned, inspected or flushed, respectively.

	Enter Total Units on System	Enter Units Completed	Percentage Completed
Large Meter Testing (each)			
Valve Turning (each)			
Hydrant Flushing (each)			
Line Flushing (Linear Feet)			

000066

UTILITY Charlestown Water Utility I. D. #

REVIEWED BY YEAR

DO NOT ENTER DATA ON THIS PAGE

BALANCE SHEET INFORMATION

		Water
Utility Plant in Service	$	7,722,741
Plant Held for Future Use		-
Construction Work in Progress		-
Plant Acquisition Adjustment (Net)		-
Accumulated Depreciation/Amortization		5,697,364
Materials & Supplies		-
Contributions in Aid of Construction		264,363
Total Rate Base	$	1,761,014

INCOME STATEMENT INFORMATION

Operating Revenues		
Residential	$	463,614
Commercial		85,674
Industrial		51,707
Other Revenues		149,142
Total Operating Revenue		750,137
Operating Expenses		
Operating Expenses		583,086
Depreciation/Amortization Expense		53,494
Income Taxes		
Taxes Other Than Income		
Property Tax		-
Utility Receipts Tax		9,916
Payroll Taxes (FICA etc.)		9,221
Other Taxes		-
Total Taxes Other Than Income		19,136
Total Operating Expenses		655,716
Net Operating Income	$	94,420

CUSTOMER COUNT

Unmetered Customers	-
Residential-Metered	2,517
Commercial-Metered	133
Industrial-Metered	24
Public Authorities-Metered	202
Multiple Family Dwellings-Metered	23
Total Metered Customers	2,899
Fire Protection	-
Other Sales to Public Authorities	-
Sales for Resale/or From Other Systems	-
Interdepartmental	-
Other	-
Total Other Customers	-
Total Customers	2,899

Unit of measurement is 1,000 gallons

2019488

000067

Attachment DSC-2

Detail of appropriations for water utility not funded by water utility revenue

ADDITIONAL APPROPRIATIONS TO THE WATER DEPARTMENT

$ 70,000.00	CASHED IN CD	12/29/2000
$ 50,000.00	CASHED IN CD	6/12/2001
$ 47,000.00	CASHED IN CD	9/25/2002
$ 18,238.00	CASHED IN CD	12/12/2002
$ 84,000.00	CASHED IN CD	12/11/2003
$ 112,000.00	CASHED IN CD	8/20/2004
$ 60,000.00	CASHED IN CD	12/7/2005
$ 80,000.00	CASHED IN CD	3/24/2006
$ 173,000.00	EDIT	12/6/2011
$ 100,000.00	TIF	8/14/2011
$ 794,238.00		

$ 195,231.00 (9) TEMPORARY LOANS FROM WASTEWATER FUNDS/FOR CAPITAL EXPENSES AND OPERATIONS

DONNA S. COOMER

Donna S. Coomer

CLERK TREASURER
CITY OF CHARLESTOWN
304 MAIN CROSS STREET
CHARLESTOWN, IN 47111

FROM CLERK TREASURER'S OFFICE

690000

Attachment DSC-3

Charlestown's Most Recent State Board of Accounts Audit

B40783

STATE BOARD OF ACCOUNTS
302 West Washington Street
Room E418
INDIANAPOLIS, INDIANA 46204-2769

FINANCIAL STATEMENT AND
FEDERAL SINGLE AUDIT REPORT
OF

CITY OF CHARLESTOWN
CLARK COUNTY, INDIANA

January 1, 2011 to December 31, 2011

FILED
08/31/2012

000071

TABLE OF CONTENTS

SCHEDULE OF OFFICIALS

Office	Official	Term
Clerk-Treasurer	Donna Coomer	01-01-08 to 12-31-15
Mayor	G. Robert Hall	01-01-08 to 12-31-15
President of the Board of Public Works and Safety	G. Robert Hall	01-01-08 to 12-31-15
President of the Common Council	Scott McKechnie	01-01-11 to 12-31-12
City Court Judge	George Waters	01-01-08 to 12-31-11
Superintendent of Utilities	Mike Perry	01-01-11 to 12-31-12

STATE OF INDIANA
AN EQUAL OPPORTUNITY EMPLOYER

STATE BOARD OF ACCOUNTS
302 WEST WASHINGTON STREET
ROOM E418
INDIANAPOLIS, INDIANA 46204-2769

Telephone: (317) 232-2513
Fax: (317) 232-4711
Web Site: www.in.gov/sboa

INDEPENDENT AUDITOR'S REPORT

TO: THE OFFICIALS OF THE CITY OF CHARLESTOWN, CLARK COUNTY, INDIANA

We have audited the accompanying financial statement of the City of Charlestown (City), for the year ended December 31, 2011. The financial statement is the responsibility of the City's management. Our responsibility is to express an opinion on the financial statement based on our audit.

We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statement is free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the City's internal control over reporting. Accordingly, we express no such opinion. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statement. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

As discussed in Note 1, the City prepares its financial statement on the prescribed basis of accounting that demonstrates compliance with the reporting requirements established by the State Board of Accounts as allowed by state statute (IC 5-11-1-6), which is a comprehensive basis of accounting other than accounting principles generally accepted in the United States of America.

In our opinion, the financial statement referred to above presents fairly, in all material respects, the financial position and results of operations of the City for the year ended December 31, 2011, on the basis of accounting described in Note 1.

In accordance with Government Auditing Standards, we have also issued a report dated August 6, 2012, on our consideration of the City's internal control over financial reporting and our tests of its compliance with certain provisions of laws, regulations, contracts, grant agreements, and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with Government Auditing Standards and should be considered in assessing the results of our audit.

Our audit was conducted for the purpose of forming an opinion on the City's financial statement. The accompanying Schedule of Expenditures of Federal Awards is presented for purposes of additional analysis as required by the U.S. Office of Management and Budget Circular A-133, Audits of States, Local Governments, and Non-Profit Organizations, and is not a required part of the financial statement. Such information has been subjected to the auditing procedures applied in the audit of the financial statement and, in our opinion, is fairly stated, in all material respects, in relation to the financial statement taken as a whole.

INDEPENDENT AUDITOR'S REPORT
(Continued)

Our audit was conducted for the purpose of forming an opinion on the City's financial statement. The Combining Schedule of Receipts, Disbursements, and Cash and Investment Balances – Regulatory Basis, Schedule of Payables and Receivables, Schedule of Leases and Debt, and Schedule of Capital Assets are presented for additional analysis and are not required parts of the financial statement. They have not been subjected to the auditing procedures applied by us in the audit of the financial statement and, accordingly, we express no opinion on them.

This report is intended solely for the information and use of the City's management, Common Council and others within the entity, federal awarding agencies, and pass-through entities and is not intended to be and should not be used by anyone other than these specified parties. In accordance with Indiana Code 5-11-5-1, this report is a part of the public records of the State Board of Accounts and of the office examined.

STATE BOARD OF ACCOUNTS

August 6, 2012

STATE OF INDIANA
AN EQUAL OPPORTUNITY EMPLOYER

STATE BOARD OF ACCOUNTS
302 WEST WASHINGTON STREET
ROOM E418
INDIANAPOLIS, INDIANA 46204-2769

Telephone: (317) 232-2513
Fax: (317) 232-4711
Web Site: www.in.gov/sboa

REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF THE FINANCIAL STATEMENT PERFORMED IN ACCORDANCE WITH GOVERNMENT AUDITING STANDARDS

TO: THE OFFICIALS OF THE CITY OF CHARLESTOWN, CLARK COUNTY, INDIANA

We have audited the financial statement of the City of Charlestown (City), for the year ended December 31, 2011, and have issued our report thereon dated August 6, 2012. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States.

Internal Control Over Financial Reporting

In planning and performing our audit, we considered the City's internal control over financial reporting as a basis for designing our auditing procedures for the purpose of expressing our opinion on the financial statement, but not for the purpose of expressing an opinion on the effectiveness of the City's internal control over financial reporting. Accordingly, we do not express an opinion on the effectiveness of the City's internal control over financial reporting.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect and correct misstatements on a timely basis. A material weakness is a deficiency or combination of deficiencies in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statement will not be prevented or detected and corrected on a timely basis.

Our consideration of internal control over financial reporting was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over financial reporting that might be deficiencies, significant deficiencies, or material weaknesses. We did not identify any deficiencies in internal control over financial reporting that we consider to be material weaknesses, as defined above.

REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF THE FINANCIAL STATEMENT PERFORMED IN ACCORDANCE WITH GOVERNMENT AUDITING STANDARDS
(Continued)

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the City's financial statement is free of material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under Government Auditing Standards.

This report is intended solely for the information and use of the City's management, Common Council, others within the entity, federal awarding agencies, and pass-through entities and is not intended to be and should not be used by anyone other than these specified parties. In accordance with Indiana Code 5-11-5-1, this report is a part of the public records of the State Board of Accounts and of the office examined.

STATE BOARD OF ACCOUNTS

August 6, 2012

FINANCIAL STATEMENT

The financial statement and accompanying notes were approved by management of the City. The financial statement and notes are presented as intended by the City.

CITY OF CHARLESTOWN
STATEMENT OF RECEIPTS, DISBURSEMENTS, AND CASH AND INVESTMENT BALANCES - REGULATORY BASIS
For The Year Ended December 31, 2011

Fund	Cash and Investments 01-01-11	Receipts	Disbursements	Cash and Investments 12-31-11
General Fund	$ 2,042	$ 3,127,044	$ 2,898,998	$ 230,088
Motor Vehicle Highway	76,479	169,994	236,815	9,658
Local Road and Street	112,001	72,155	68,195	115,961
Parks Department NRF	6,486	14,990	7,150	14,326
Alcohol and Drug Services	2,100	4,125	6,225	-
NRF Planning and Zoning Review and Development Fees	5,943	36,577	34,618	7,902
Beautification	23,578	41,354	42,720	22,212
Local Law Enforcement Continuing Education	16,932	5,937	15,708	7,161
Clerk's Record Perpetuation	8,229	352	-	8,581
Deferral Program	26,025	1,590	300	27,315
User Fees	2,522	2,600	4,171	951
Rainy Day Fund	645,181	106,157	170,000	581,338
Charlestown Police Department K-9 NRF	1,069	100	-	1,169
EDIT	816,827	225,202	431,170	610,859
City Parks Capital	18,396	7,005	4,697	20,704
Police Equipment NRF	4,035	119,574	87,022	36,587
City Improvement	11,936	9,954	8,073	13,817
Cumulative Capital Improvement	4	43,210	-	43,214
TIF	675,730	515,454	562,519	628,665
Police Pension	136,732	95,553	93,770	138,515
County Court Costs	1,364	2,874	4,156	82
Riverboat Wagering Revenue	37,505	-	26,000	11,505
LOIT Public Safety	171,892	175,446	160,906	186,432
City Court	5,028	29,105	31,435	2,698
Charlestown Police Department Youth Coalition NRF	1,021	6,346	6,713	654
Charlestown Police Department SRT NRF	78	-	-	78
Charlestown Police Department Grant NRF	5,007	-	-	5,007
Neighborhood Block Watch	2,685	-	-	2,685
Vehicle Tow In Fees	150	1,475	-	1,625
Christmas With A Cop	10,350	10,211	10,414	10,147
Charlestown Police Departmet Miscellaneous NRF	7,612	5,676	1,932	11,356
Police Payroll Grants	3,550	58,892	57,493	4,949
Employee Recognition	-	5,082	2,650	2,432
Youth and Family Complex	-	262,000	257,310	4,690
Capital Trust Fund	990,015	53,008	16,069	1,026,954
Economic Development	10	-	-	10
Mayor's Christmas Awards	850	-	-	850
Utility Clearing Fund	-	44,772	44,686	86
Payroll	39,685	2,111,150	2,116,560	34,275
Wastewater Operating	365,353	1,700,506	1,645,113	420,746
Spring Street Grant	-	600,000	600,000	-
Sanitary Sewer Project Retainage	-	60,799	60,799	-
Construction Retainage	89,336	33,069	122,405	-
Wastewater Bond and Interest	144,800	428,856	421,624	152,032
Wastewater Debt Service Reserve	430,600	5,060	5,112	430,548
Sewer Construction Cash	-	238,897	206,691	32,206
Water Operating	99,249	809,219	866,206	42,262
Water Guarantee Meter Deposit	58,288	11,008	10,694	58,602
Water Bond and Interest	170	138,694	138,118	746
Water Debt Service Reserve	125,351	28,476	-	153,827
Totals	$ 5,182,196	$ 11,419,548	$ 11,485,237	$ 5,116,507

The notes to the financial statement are an integral part of this statement.

CITY OF CHARLESTOWN
NOTES TO FINANCIAL STATEMENT

Note 1. Summary of Significant Accounting Policies

A. Reporting Entity

The City was established under the laws of the State of Indiana. The City operates under a Council-Mayor form of government and provides some or all of the following services: public safety (police and fire), highways and streets, health and social services, culture and recreation, public improvements, planning and zoning, general administrative services, water, wastewater, trash, and urban redevelopment and housing.

The accompanying financial statement presents the financial information for the City.

B. Basis of Accounting

The financial statement is reported on a regulatory basis of accounting prescribed by the State Board of Accounts in accordance with state statute (IC 5-11-1-6), which is a comprehensive basis of accounting other than accounting principles generally accepted in the United States of America. Receipts are recorded when received and disbursements are recorded when paid.

The regulatory basis of accounting differs from accounting principles generally accepted in the United States of America in that receipts are recognized when received in cash, rather than when earned, and disbursements are recognized when paid, rather than when a liability is incurred.

C. Cash and Investments

Investments are stated at cost. Any changes in fair value of the investments are reported as receipts in the year of the sale of the investment.

D. Receipts

Receipts are presented in the aggregate on the face of the financial statement. The aggregate receipts may include the following sources:

Taxes which can include one or more of the following: property taxes, certified shares (local option tax), property tax replacement credit (local option tax), county option income tax, wheel tax, food and beverage tax, county economic development income tax, boat and trailer excise tax, county adjusted gross income tax, and other taxes that are set by the City.

Licenses and permits which include amounts received from businesses, occupations, or nonbusinesses that must be licensed before doing business within the government's jurisdiction or permits levied according to the benefits presumably conferred by the permit. Examples of licenses and permits include: peddler licenses, building and planning permits, demolition permits, electrical permits, sign permits, and gun permits.

Intergovernmental receipts which include receipts from other governments in the form of operating grants, entitlements, or payments in lieu of taxes. Examples of this type of receipts include, but are not limited to: federal grants, state grants, cigarette tax distributions received from the state, motor vehicle highway distribution received from the state, local road and street distribution received from the state, financial institution tax received

from the state, auto excise surtax received from the state, commercial vehicle excise tax received from the state, major moves distributions received from the state, and riverboat receipts received from the county.

Charges for services which can include, but are not limited to the following: planning commission charges, building department charges, copies of public records, copy machine charges, accident report copies, gun permit applications, recycling fees, park rental fees, swimming pool receipts, cable TV receipts, ordinance violations, fines and fees, bond forfeitures, court costs, and court receipts.

Fines and forfeits which include receipts derived from fines and penalties imposed for the commission of statutory offenses, violation of lawful administrative rules and regulations (fines), and for the neglect of official duty and monies derived from confiscating deposits held as performance guarantees (forfeitures).

Utility fees which are comprised mostly of charges for current services.

Penalties which include fees received for late payments.

Other receipts which include amounts received from various sources which can include, but are not limited to the following: net proceeds from borrowings; interfund loan activity; transfers authorized by statute, ordinance, resolution or court order; internal service receipts; and fiduciary receipts.

E. Disbursements

Disbursements are presented in the aggregate on the face of the financial statement. The aggregate disbursements may include, but are not limited to, the following uses:

Personal services include outflows for salaries, wages, and related employee benefits provided for all persons employed. In those units where sick leave, vacation leave, overtime compensation, and other such benefits are appropriated separately, such payments would also be included.

Supplies, which include articles and commodities that are entirely consumed and materially altered when used and/or show rapid depreciation after use for a short period of time. Examples of supplies include office supplies, operating supplies, and repair and maintenance supplies.

Other services and charges which include, but are not limited to: professional services, communication and transportation, printing and advertising, insurance, utility services, repairs and maintenance, and rental charges.

Debt service principal and interest which include fixed obligations resulting from financial transactions previously entered into by the City. It includes all expenditures for the reduction of the principal and interest of the City's general obligation indebtedness.

Capital outlay which include all outflows for land, infrastructure, buildings, improvements, and machinery and equipment having an appreciable and calculable period of usefulness.

Utility operating expenses which include all outflows for operating the utilities.

Other disbursements which include, but are not limited to the following: interfund loan payments, loans made to other funds, internal service disbursements, and transfers out that are authorized by statute, ordinance, resolution, or court order.

F. Interfund Transfers

The City may, from time to time, transfer money from one fund to another. These transfers, if any, are included as a part of the receipts and disbursements of the affected funds and as a part of total receipts and disbursements. The transfers are used for cash flow purposes as provided by various statutory provisions.

G. Fund Accounting

Separate funds are established, maintained, and reported by the City. Each fund is used to account for money received from and used for specific sources and uses as determined by various regulations. Restrictions on some funds are set by statute while other funds are internally restricted by the City. The money accounted for in a specific fund may only be available for use for certain, legally restricted purposes. Additionally, some funds are used to account for assets held by the City in a trustee capacity as an agent of individuals, private organizations, other funds, or other governmental units and therefore the funds cannot be used for any expenditures of the unit itself.

Note 2. Budgets

The operating budget is initially prepared and approved at the local level. The fiscal officer of the City submits a proposed operating budget to the governing board for the following calendar year. The budget is advertised as required by law. Prior to adopting the budget, the governing board conducts public hearings and obtains taxpayer comments. Prior to November 1, the governing board approves the budget for the next year. The budget for funds for which property taxes are levied or highway use taxes are received is subject to final approval by the Indiana Department of Local Government Finance.

Note 3. Property Taxes

Property taxes levied are collected by the County Treasurer and are scheduled to be distributed to the City in June and December; however, situations can arise which would delay the distributions. State statute (IC 6-1.1-17-16) requires the Indiana Department of Local Government Finance to establish property tax rates and levies by February 15. These rates were based upon the preceding year's March 1 (lien date) assessed valuations adjusted for various tax credits. Taxable property is assessed at 100 percent of the true tax value (determined in accordance with rules and regulations adopted by the Indiana Department of Local Government Finance). Taxes may be paid in two equal installments which normally become delinquent if not paid by May 10 and November 10, respectively.

Note 4. Deposits and Investments

Deposits, made in accordance with state statute (IC 5-13), with financial institutions in the State of Indiana at year end should be entirely insured by the Federal Depository Insurance Corporation or by the Indiana Public Deposit Insurance Fund. This includes any deposit accounts issued or offered by a qualifying financial institution.

State statutes authorize the City to invest in securities including, but not limited to, federal government securities, repurchase agreements, and certain money market mutual funds. Certain other statutory restrictions apply to all investments made by local governmental units.

Note 5. Risk Management

The City may be exposed to various risks of loss related to torts; theft of, damage to, and destruction of assets; errors and omissions; job related illnesses or injuries to employees; medical benefits to employees, retirees, and dependents; and natural disasters.

These risks can be mitigated through the purchase of insurance, establishment of a self-insurance fund, and/or participation in a risk pool. The purchase of insurance transfers the risk to an independent third party. The establishment of a self-insurance fund allows the City to set aside money for claim settlements. The self-insurance fund would be included in the financial statements. The purpose of participation in a risk pool is to provide a medium for the funding and administration of the risks. These risks may also be mitigated by the City by recording as a disbursement any replacement items purchased.

Note 6. Pension Plans

A. Public Employees' Retirement Fund

Plan Description

The Indiana Public Employees' Retirement Fund (PERF) is a defined benefit pension plan. PERF is an agent multiple-employer public employee retirement system, which provides retirement benefits to plan members and beneficiaries. All full-time employees are eligible to participate in this defined benefit plan. State statutes (IC 5-10.2 and 5-10.3) govern, through the Indiana Public Retirement System (INPRS) Board, most requirements of the system, and give the City authority to contribute to the plan. The PERF retirement benefit consists of the pension provided by employer contributions plus an annuity provided by the member's annuity savings account. The annuity savings account consists of members' contributions, set by state statute at 3 percent of compensation, plus the interest credited to the member's account. The employer may elect to make the contributions on behalf of the member.

INPRS administers the plan and issues a publicly available financial report that includes financial statements and required supplementary information for the plan as a whole and for its participants. That report may be obtained by contacting:

Indiana Public Retirement System
1 North Capital Street, Suite 001
Indianapolis, IN 46204
Ph. (888) 526-1687

Funding Policy and Annual Pension Cost

The contribution requirements of the plan members for PERF are established by the Board of Trustees of INPRS.

B. 1925 Police Officers' Pension Plan

Plan Description

The 1925 Police Officers' Pension Plan is a single-employer defined benefit pension plan. The plan is administered by the local pension board as authorized by state statute (IC 36-8-6). The plan provides retirement, disability, and death benefits to plan members and beneficiaries. The plan was established by the plan administrator, as provided by state statute. The plan administrator does not issue a publicly available financial report that includes financial statements and required supplementary information of the plan.

Funding Policy

The contribution requirements of plan members for the 1925 Police Officers' Pension Plan are established by state statute.

On Behalf Payments

The 1925 Police Officers' Pension Plan is funded by the State of Indiana through the Indiana Public Retirement System as provided under Indiana Code 5-10.3-11.

C. 1977 Police Officers' and Firefighters' Pension and Disability Fund

Plan Description

The 1977 Police Officers' and Firefighters' Pension and Disability Fund is a cost-sharing multiple-employer defined benefit pension plan administered by the Indiana Public Retirement System (INPRS) for all police officers and firefighters hired after April 30, 1977.

State statute (IC 36-8-8) regulates the operations of the system, including benefits, vesting, and requirements for contributions by employers and by employees. Covered employees may retire at age 52 with 20 years of service. An employee with 20 years of service may leave service, but will not receive benefits until reaching age 52. The plan also provides for death and disability benefits.

INPRS issues a publicly available financial report that includes financial statements and required supplementary information for the plan as a whole and for its participants. That report may be obtained by contacting:

Indiana Public Retirement System
1 North Capital Street, Suite 001
Indianapolis, IN 46204
Ph. (888) 526-1687

Funding Policy

The contribution requirements of plan members and the City are established by the Board of Trustees of INPRS.

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SUPPLEMENTARY INFORMATION – UNAUDITED

For additional financial information, the City's 2011 Annual Report information can be found on the Gateway website: https://gateway.ifionline.org/.

Differences may be noted between the financial information presented in the financial statement contained in this report and the financial information presented in the Annual Report of the City which is referenced above. These differences, if any, are due to adjustments made to the financial information during the course of the audit. This is a common occurrence in any financial statement audit. The financial information presented in this report is audited information, and the accuracy of such information can be determined by reading the opinion given in the Independent Auditor's Report.

The supplementary information presented was approved by management of the City. It is presented as intended by the City.

CITY OF CHARLESTOWN
COMBINING SCHEDULE OF RECEIPTS, DISBURSEMENTS, AND
CASH AND INVESTMENT BALANCES - REGULATORY BASIS
For The Year Ended December 31, 2011

	General Fund	Motor Vehicle Highway	Local Road and Street	Parks Department NRF	Alcohol and Drug Services	NRF Planning and Zoning Review and Development Fees	Beautification
Cash and investments - beginning	$ 2,042	$ 76,479	$ 112,001	$ 6,486	$ 2,100	$ 5,943	$ 23,578
Receipts:							
Taxes	1,721,449	-	-	-	-	-	-
Licenses and permits	15,000	-	-	-	-	36,577	-
Intergovernmental	963,700	167,279	72,155	-	-	-	-
Charges for services	360,055	-	-	14,990	-	-	-
Fines and forfeits	4,494	-	-	-	4,125	-	-
Utility fees	-	-	-	-	-	-	-
Other receipts	62,346	2,715	-	-	-	-	41,354
Total receipts	3,127,044	169,994	72,155	14,990	4,125	36,577	41,354
Disbursements:							
Personal services	1,917,254	95,512	-	-	-	-	-
Supplies	188,388	10,550	21,417	-	-	-	13,632
Other services and charges	599,168	111,194	-	7,150	-	34,618	29,088
Debt service - principal and interest	-	-	-	-	-	-	-
Capital outlay	53,807	19,559	46,778	-	-	-	-
Utility operating expenses	-	-	-	-	-	-	-
Other disbursements	140,381	-	-	-	6,225	-	-
Total disbursements	2,898,998	236,815	68,195	7,150	6,225	34,618	42,720
Excess (deficiency) of receipts over disbursements	228,046	(66,821)	3,960	7,840	(2,100)	1,959	(1,366)
Cash and investments - ending	$ 230,088	$ 9,658	$ 115,961	$ 14,326	$ -	$ 7,902	$ 22,212

CITY OF CHARLESTOWN
COMBINING SCHEDULE OF RECEIPTS, DISBURSEMENTS, AND
CASH AND INVESTMENT BALANCES - REGULATORY BASIS
For The Year Ended December 31, 2011
(Continued)

	Local Law Enforcement Continuing Education	Clerk's Record Perpetuation	Deferral Program	User Fees	Rainy Day Fund	Charlestown Police Department K-9 NRF	EDIT
Cash and investments - beginning	$ 16,932	$ 8,229	$ 26,025	$ 2,522	$ 645,181	$ 1,069	$ 816,827
Receipts:							
Taxes	-	-	-	-	106,157	-	175,202
Licenses and permits	1,970	-	-	-	-	-	-
Intergovernmental	-	-	-	-	-	-	50,000
Charges for services	-	-	-	-	-	-	-
Fines and forfeits	3,967	352	1,590	2,600	-	-	-
Utility fees	-	-	-	-	-	-	-
Other receipts	-	-	-	-	-	100	-
Total receipts	5,937	352	1,590	2,600	106,157	100	225,202
Disbursements:							
Personal services	-	-	300	-	-	-	-
Supplies	-	-	-	-	-	-	-
Other services and charges	15,708	-	-	-	170,000	-	108,767
Debt service - principal and interest	-	-	-	-	-	-	-
Capital outlay	-	-	-	-	-	-	272,403
Utility operating expenses	-	-	-	-	-	-	-
Other disbursements	-	-	-	4,171	-	-	50,000
Total disbursements	15,708	-	300	4,171	170,000	-	431,170
Excess (deficiency) of receipts over disbursements	(9,771)	352	1,290	(1,571)	(63,843)	100	(205,968)
Cash and investments - ending	$ 7,161	$ 8,581	$ 27,315	$ 951	$ 581,338	$ 1,169	$ 610,859

CITY OF CHARLESTOWN
COMBINING SCHEDULE OF RECEIPTS, DISBURSEMENTS, AND
CASH AND INVESTMENT BALANCES - REGULATORY BASIS
For The Year Ended December 31, 2011
(Continued)

	City Parks Capital	Police Equipment NRF	City Improvement	Cumulative Capital Improvement	TIF	Police Pension	County Court Costs
Cash and investments - beginning	$ 18,396	$ 4,035	$ 11,936	$ 4	$ 675,730	$ 136,732	$ 1,364
Receipts:							
Taxes	-	-	-	26,000	515,454	-	-
Licenses and permits	-	-	-	-	-	-	-
Intergovernmental	-	-	-	17,210	-	-	-
Charges for services	-	-	-	-	-	-	-
Fines and forfeits	-	-	-	-	-	-	2,874
Utility fees	-	-	-	-	-	-	-
Other receipts	7,005	119,574	9,954	-	-	95,553	-
Total receipts	7,005	119,574	9,954	43,210	515,454	95,553	2,874
Disbursements:							
Personal services	279	-	-	-	-	-	-
Supplies	-	-	-	-	1,685	-	-
Other services and charges	-	-	3,450	-	224,077	-	-
Debt service - principal and interest	-	-	-	-	-	-	-
Capital outlay	4,418	87,022	4,623	-	195,623	-	-
Utility operating expenses	-	-	-	-	-	-	-
Other disbursements	-	-	-	-	141,234	93,770	4,156
Total disbursements	4,697	87,022	8,073	-	562,519	93,770	4,156
Excess (deficiency) of receipts over disbursements	2,308	32,552	1,881	43,210	(47,065)	1,783	(1,282)
Cash and investments - ending	$ 20,704	$ 36,587	$ 13,817	$ 43,214	$ 628,665	$ 138,515	$ 82

CITY OF CHARLESTOWN
COMBINING SCHEDULE OF RECEIPTS, DISBURSEMENTS, AND
CASH AND INVESTMENT BALANCES - REGULATORY BASIS
For The Year Ended December 31, 2011
(Continued)

	Riverboat Wagering Revenue	LOIT Public Safety	City Court	Charlestown Police Department Youth Coalition NRF	Charlestown Police Department SRT NRF	Charlestown Police Department Grant NRF
Cash and investments - beginning	$ 37,505	$ 171,892	$ 5,028	$ 1,021	$ 78	$ 5,007
Receipts:						
Taxes	-	-	-	-	-	-
Licenses and permits	-	-	-	-	-	-
Intergovernmental	-	175,446	-	-	-	-
Charges for services	-	-	-	-	-	-
Fines and forfeits	-	-	29,105	-	-	-
Utility fees	-	-	-	-	-	-
Other receipts	-	-	-	6,346	-	-
Total receipts	-	175,446	29,105	6,346	-	-
Disbursements:						
Personal services	-	-	-	-	-	-
Supplies	-	-	-	6,713	-	-
Other services and charges	26,000	126,592	-	-	-	-
Debt service - principal and interest	-	-	-	-	-	-
Capital outlay	-	34,314	-	-	-	-
Utility operating expenses	-	-	-	-	-	-
Other disbursements	-	-	31,435	-	-	-
Total disbursements	26,000	160,906	31,435	6,713	-	-
Excess (deficiency) of receipts over disbursements	(26,000)	14,540	(2,330)	(367)	-	-
Cash and investments - ending	$ 11,505	$ 186,432	$ 2,698	$ 654	$ 78	$ 5,007

CITY OF CHARLESTOWN
COMBINING SCHEDULE OF RECEIPTS, DISBURSEMENTS, AND
CASH AND INVESTMENT BALANCES - REGULATORY BASIS
For The Year Ended December 31, 2011
(Continued)

	Neighborhood Block Watch	Vehicle Tow In Fees	Christmas With A Cop	Charlestown Police Departmet Miscellaneous NRF	Police Payroll Grants	Employee Recognition
Cash and investments - beginning	$ 2,685	$ 150	$ 10,350	$ 7,612	$ 3,550	$ -
Receipts:						
Taxes	-	-	-	-	-	-
Licenses and permits	-	-	-	-	-	-
Intergovernmental	-	-	-	-	58,892	-
Charges for services	-	-	-	-	-	-
Fines and forfeits	-	1,475	-	-	-	-
Utility fees	-	-	-	-	-	-
Other receipts	-	-	10,211	5,676	-	5,082
Total receipts	-	1,475	10,211	5,676	58,892	5,082
Disbursements:						
Personal services	-	-	-	-	57,493	2,650
Supplies	-	-	-	-	-	-
Other services and charges	-	-	10,414	1,932	-	-
Debt service - principal and interest	-	-	-	-	-	-
Capital outlay	-	-	-	-	-	-
Utility operating expenses	-	-	-	-	-	-
Other disbursements	-	-	-	-	-	-
Total disbursements	-	-	10,414	1,932	57,493	2,650
Excess (deficiency) of receipts over disbursements	-	1,475	(203)	3,744	1,399	2,432
Cash and investments - ending	$ 2,685	$ 1,625	$ 10,147	$ 11,356	$ 4,949	$ 2,432

CITY OF CHARLESTOWN
COMBINING SCHEDULE OF RECEIPTS, DISBURSEMENTS, AND
CASH AND INVESTMENT BALANCES - REGULATORY BASIS
For The Year Ended December 31, 2011
(Continued)

	Youth and Family Complex	Capital Trust Fund	Economic Development	Mayor's Christmas Awards	Utility Clearing Fund	Payroll
Cash and investments - beginning	$ -	$ 990,015	$ 10	$ 850	$ -	$ 39,685
Receipts:						
Taxes	-	-	-	-	-	-
Licenses and permits	-	-	-	-	-	-
Intergovernmental	-	-	-	-	-	-
Charges for services	-	-	-	-	-	-
Fines and forfeits	-	-	-	-	-	-
Utility fees	-	-	-	-	-	-
Other receipts	262,000	53,008	-	-	44,772	2,111,150
Total receipts	262,000	53,008	-	-	44,772	2,111,150
Disbursements:						
Personal services	-	-	-	-	-	1,571,739
Supplies	-	-	-	-	-	-
Other services and charges	-	16,069	-	-	44,686	644
Debt service - principal and interest	-	-	-	-	-	-
Capital outlay	257,310	-	-	-	-	-
Utility operating expenses	-	-	-	-	-	-
Other disbursements	-	-	-	-	-	544,177
Total disbursements	257,310	16,069	-	-	44,686	2,116,560
Excess (deficiency) of receipts over disbursements	4,690	36,939	-	-	86	(5,410)
Cash and investments - ending	$ 4,690	$ 1,026,954	$ 10	$ 850	$ 86	$ 34,275

CITY OF CHARLESTOWN
COMBINING SCHEDULE OF RECEIPTS, DISBURSEMENTS, AND
CASH AND INVESTMENT BALANCES - REGULATORY BASIS
For The Year Ended December 31, 2011
(Continued)

	Wastewater Operating	Spring Street Grant	Sanitary Sewer Project Retainage	Construction Retainage	Wastewater Bond and Interest	Wastewater Debt Service Reserve
Cash and investments - beginning	$ 365,353	$ -	$ -	$ 89,336	$ 144,800	$ 430,600
Receipts:						
Taxes	-	-	-	-	-	-
Licenses and permits	-	-	-	-	-	-
Intergovernmental	-	600,000	-	-	-	-
Charges for services	-	-	-	-	-	-
Fines and forfeits	-	-	-	-	-	-
Utility fees	1,344,091	-	-	-	-	-
Other receipts	356,415	-	60,799	33,069	428,856	5,060
Total receipts	1,700,506	600,000	60,799	33,069	428,856	5,060
Disbursements:						
Personal services	-	-	-	-	-	-
Supplies	-	-	-	-	-	-
Other services and charges	-	-	-	-	-	-
Debt service - principal and interest	1,240	-	-	-	421,624	-
Capital outlay	388,505	600,000	-	-	-	-
Utility operating expenses	802,819	-	-	-	-	-
Other disbursements	452,549	-	60,799	122,405	-	5,112
Total disbursements	1,645,113	600,000	60,799	122,405	421,624	5,112
Excess (deficiency) of receipts over disbursements	55,393	-	-	(89,336)	7,232	(52)
Cash and investments - ending	$ 420,746	$ -	$ -	$ -	$ 152,032	$ 430,548

CITY OF CHARLESTOWN
COMBINING SCHEDULE OF RECEIPTS, DISBURSEMENTS, AND
CASH AND INVESTMENT BALANCES - REGULATORY BASIS
For The Year Ended December 31, 2011
(Continued)

	Sewer Construction Cash	Water Operating	Water Guarantee Meter Deposit	Water Bond and Interest	Water Debt Service Reserve	Totals
Cash and investments - beginning	$ -	$ 99,249	$ 58,288	$ 170	$ 125,351	$ 5,182,196
Receipts:						
Taxes	-	-	-	-	-	2,544,262
Licenses and permits	-	-	-	-	-	53,547
Intergovernmental	-	-	-	-	-	2,104,682
Charges for services	-	-	-	-	-	375,045
Fines and forfeits	-	-	-	-	-	50,582
Utility fees	-	778,566	-	-	-	2,122,657
Other receipts	238,897	30,653	11,008	138,694	28,476	4,168,773
Total receipts	238,897	809,219	11,008	138,694	28,476	11,419,548
Disbursements:						
Personal services	-	-	-	-	-	3,645,227
Supplies	-	-	-	-	-	242,285
Other services and charges	-	-	-	-	-	1,529,557
Debt service - principal and interest	-	-	-	138,118	-	560,982
Capital outlay	206,691	86,623	-	-	-	2,257,676
Utility operating expenses	-	557,416	40	-	-	1,360,275
Other disbursements	-	222,167	10,654	-	-	1,889,235
Total disbursements	206,691	866,206	10,694	138,118	-	11,485,237
Excess (deficiency) of receipts over disbursements	32,206	(56,987)	314	576	28,476	(65,689)
Cash and investments - ending	$ 32,206	$ 42,262	$ 58,602	$ 746	$ 153,827	$ 5,116,507

CITY OF CHARLESTOWN
SCHEDULE OF PAYABLES AND RECEIVABLES
December 31, 2011

Government or Enterprise	Accounts Payable	Accounts Receivable
Governmental activities	$ 84,044	$ 37,491
Wastewater	28,459	159,672
Water	25,102	53,883
Totals	$ 147,605	$ 251,046

CITY OF CHARLESTOWN
SCHEDULE OF LEASES AND DEBT
December 31, 2011

Lessor	Purpose	Annual Lease Payment	Lease Beginning Date	Lease Ending Date
Governmental activities:				
1st Source	Police Vehicles	$ 34,314	05-07-09	05-07-12
The New Washington State Bank	3 Sanitation Trucks	48,607	09-15-11	09-15-17
Total governmental activities		82,921		
Wastewater:				
Key Government Finance	Vactor Truck	44,301	05-01-09	06-01-14
The New Washington State Bank	Kubota Excavator	19,227	09-15-11	09-15-15
Total Wastewater		63,528		
Total of annual lease payments		$ 146,449		

Description of Debt		Ending Principal Balance	Principal and Interest Due Within One Year
Type	Purpose		
Governmental activities:			
Tax anticipation warrants	waterworks improvements to benefit tif area	$ 440,000	$ 99,908
Wastewater:			
Revenue bonds	sewer upgrades	335,000	124,430
Revenue bonds	upgrade sewer plant	3,425,000	306,118
Total Wastewater		3,760,000	4,190,548
Water:			
Revenue bonds	update water plant	1,860,000	136,672
Totals		$ 6,060,000	$ 667,128

CITY OF CHARLESTOWN
SCHEDULE OF CAPITAL ASSETS
December 31, 2011

Capital assets are reported at actual or estimated historical cost based on appraisals or deflated current replacement cost. Contributed or donated assets are reported at estimated fair value at the time received.

	Ending Balance
Governmental activities:	
Land	$ 499,292
Infrastructure	8,841,741
Buildings	927,175
Improvements other than buildings	34,053
Machinery, equipment and vehicles	3,499,528
Construction in progress	233,271
Total governmental activities	14,035,060
Wastewater:	
Land	80,787
Infrastructure	7,442,166
Buildings	2,928,683
Improvements other than buildings	95,500
Machinery, equipment and vehicles	2,440,884
Construction in progress	85,286
Total Wastewater	13,073,306
Water:	
Land	2,725
Infrastructure	5,681,618
Buildings	8,995
Improvements other than buildings	1,425,124
Machinery, equipment and vehicles	380,936
Construction in progress	233,233
Total Water	7,732,631
Total capital assets	$ 34,840,997

SUPPLEMENTAL AUDIT OF

FEDERAL AWARDS

STATE OF INDIANA
AN EQUAL OPPORTUNITY EMPLOYER

STATE BOARD OF ACCOUNTS
302 WEST WASHINGTON STREET
ROOM E418
INDIANAPOLIS, INDIANA 46204-2769

Telephone: (317) 232-2513
Fax: (317) 232-4711
Web Site: www.in.gov/sboa

INDEPENDENT AUDITOR'S REPORT ON COMPLIANCE WITH REQUIREMENTS THAT COULD HAVE A DIRECT AND MATERIAL EFFECT ON EACH MAJOR PROGRAM AND INTERNAL CONTROL OVER COMPLIANCE IN ACCORDANCE WITH OMB CIRCULAR A-133

TO: THE OFFICIALS OF THE CITY OF CHARLESTOWN, CLARK COUNTY, INDIANA

Compliance

We have audited the compliance of the City of Charlestown (City) with the types of compliance requirements described in the U.S. Office of Management and Budget (OMB) Circular A-133 Compliance Supplement that are applicable to its major federal program for the year ended December 31, 2011. The City's major federal program is identified in the Summary of Auditor's Results section of the accompanying Schedule of Findings and Questioned Costs. Compliance with the requirements of laws, regulations, contracts, and grants applicable to its major federal program is the responsibility of the City's management. Our responsibility is to express an opinion on the City's compliance based on our audit.

We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States; and OMB Circular A-133, Audits of States, Local Governments, and Non-Profit Organizations. Those standards and OMB Circular A-133 require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major federal program occurred. An audit includes examining, on a test basis, evidence about the City's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion. Our audit does not provide a legal determination of the City's compliance with those requirements.

In our opinion, the City complied, in all material respects, with the requirements referred to above that are applicable to its major federal program for the year ended December 31, 2011.

Internal Control Over Compliance

Management of the City is responsible for establishing and maintaining effective internal control over compliance with requirements of laws, regulations, contracts, and grants applicable to federal programs. In planning and performing our audit, we considered the City's internal control over compliance with requirements that could have a direct and material effect on a major federal program in order to determine our auditing procedures for the purpose of expressing our opinion on compliance and to test and report on internal control over compliance in accordance with OMB Circular A-133, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the City's internal control over compliance.

INDEPENDENT AUDITOR'S REPORT ON COMPLIANCE WITH REQUIREMENTS THAT COULD HAVE A DIRECT AND MATERIAL EFFECT ON EACH MAJOR PROGRAM AND INTERNAL CONTROL OVER COMPLIANCE IN ACCORDANCE WITH OMB CIRCULAR A-133
(Continued)

A deficiency in internal control over compliance exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect and correct noncompliance with a type of compliance requirement of a federal program on a timely basis. A material weakness in internal control over compliance is a deficiency, or combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis.

Our consideration of the internal control over compliance was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over compliance that might be deficiencies, significant deficiencies or material weaknesses. We did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses, as defined above.

This report is intended solely for the information and use of the City's management, Common Council, others within the entity, federal awarding agencies, and pass-through entities and is not intended to be and should not be used by anyone other than these specified parties. In accordance with Indiana Code 5-11-5-1, this report is a part of the public records of the State Board of Accounts and of the office examined.

STATE BOARD OF ACCOUNTS

August 6, 2012

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SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS

The Schedule of Expenditures of Federal Awards and accompanying notes presented were approved by management of the City. The schedule and notes are presented as intended by the City.

CITY OF CHARLESTOWN
SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS
For The Year Ended December 31, 2011

Federal Grantor Agency/Pass-Through Entity Cluster Title/Program Title/Project Title	Federal CFDA Number	Pass-Through Entity (or Other) Identifying Number	Total Federal Awards Expended
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT			
Pass-Through Indiana Office of Community and Rural Affairs			
CDBG - State Administered CDBG Cluster			
Community Development Block Grants/ State's Program and Non-Entitlement Grants in Hawaii	14.228		
Sanitary Sewer Interceptor Project		038-CDBG-10-SUB	$ 600,000
Strategic Economic Development Plan		038-CDBG-09-SUB	50,000
Total for cluster			650,000
Total for federal grantor agency			650,000
U.S. DEPARTMENT OF TRANSPORTATION			
Pass-Through Indiana Criminal Justice Institute			
Highway Safety Cluster			
State and Community Highway Safety	20.600		
Clark County Traffic Safety Partnership		032NHTSA4022011	32,270
Alcohol Impaired Driving Countermeasures Incentive Grants I	20.601		
Clark County DUI Taskforce		032NHTSA4102011	26,400
Total for cluster			58,670
Total for federal grantor agency			58,670
U.S. ENVIRONMENTAL PROTECTION AGENCY			
Pass-Through Indiana Finance Authority			
ARRA - Capitalization Grants for Clean Water State Revolving Funds	66.458		
State Revolving Loan		WW09021001	152,061
Total for program			152,061
Total for federal grantor agency			152,061
Total federal awards expended			$ 860,731

The accompanying notes are an integral part of the Schedule of Expenditures of Federal Awards.

CITY OF CHARLESTOWN
NOTES TO SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS

Note 1. Basis of Presentation

The accompanying Schedule of Expenditures of Federal Awards includes the federal grant activity of the City of Charlestown (City) and is presented in accordance with the cash and investment basis of accounting used in the preparation of the financial statement. Accordingly, the amount of federal awards expended is based on when the disbursement related to the award occurs except when the federal award is received on a reimbursement basis. In these instances the federal awards are considered expended when the reimbursement is received.

Note 2. Subrecipients

Of the federal expenditures presented in the schedule, the City provided federal awards to subrecipients as follows for the year ended December 31, 2011:

Program Title	Federal CFDA Number	2011
State and Community Highway Safety	20.600	$ 24,302
Alcohol Impaired Driving Countermeasures Incentive Grants I	20.601	18,239

CITY OF CHARLESTOWN
SCHEDULE OF FINDINGS AND QUESTIONED COSTS

Section I – Summary of Auditor's Results

Financial Statement:

Type of auditor's report issued:	Unqualified
Internal control over financial reporting:	
Material weaknesses identified?	no
Significant deficiency identified?	none reported
Noncompliance material to financial statements noted?	no

Federal Awards:

Internal control over major programs:	
Material weaknesses identified?	no
Significant deficiency identified?	none reported
Type of auditor's report issued on compliance for major programs:	Unqualified
Any audit findings disclosed that are required to be reported in accordance with section 510(a) of Circular A-133?	no

Identification of Major Programs:

Name of Federal Program or Cluster
CDBG - State Administered CDBG Cluster

Dollar threshold used to distinguish between Type A and Type B programs: $300,000

Auditee qualified as low-risk auditee? no

Section II – Financial Statement Findings

No matters are reportable.

Section III – Federal Award Findings and Questioned Costs

No matters are reportable.

CITY OF CHARLESTOWN
SUMMARY SCHEDULE OF PRIOR AUDIT FINDINGS

No matters are reportable.

CITY OF CHARLESTOWN
EXIT CONFERENCE

The contents of this report were discussed on August 6, 2012, with Donna Coomer, Clerk-Treasurer, and G. Robert Hall, Mayor. Our audit disclosed no material items that warrant comment at this time.

Attachment DSC-4

Report on Use of Proceeds from 2008 Bond Issuance

000108

Installed by the CITY OF CHARLESTOWN-2012

Project History

All Projects

Project # 083.0000 thru 083.0000

Detail

083.0000 Water Construction Project — START DATE 12/30/2006 — PROJECT ID — FUND 600

C RACT? N

BEG/ADJ BALANCE	PRIOR RECEIPT BAL	PRIOR EXPENSE BAL	CURRENT BALANCE
0.00	0.00	0.00	17.18

EXPENSES

APPROPRIATION	DATE	VENDOR	TITLE	DOC NUM	TOTAL EXPENDED
600001312.000	12/17/2007	HANNUM WAGLE &		29889	2100.00
600001313.000	06/25/2007	HANNUM WAGLE &		27773	15000.00
600001313.000	06/25/2007	HANNUM WAGLE &		27774	8971.61
600001313.000	07/16/2007	HANNUM WAGLE &		27921	22350.81
600001313.000	08/20/2007	HANNUM WAGLE &		28348	19499.55
600001313.000	09/10/2007	HANNUM WAGLE &		28641	3471.01
600001313.000	11/19/2007	HANNHUM WAGLE &		29509	1408.81
600001313.000	09/03/2008	HANNUM WAGLE &		33203	851.66
600001313.000	09/09/2008	SAEGESSER		33239	1400.00
600001313.000	09/09/2008	SAEGESSER		33240	550.00
SUBTOTAL 300					75603.45
600001430.000	06/25/2007	MAC CONSTRUCTION		27766	109958.40
600001430.000	06/25/2007	NEW WASHINGTON		27767	12217.60
600001430.000	07/16/2007	PHOENIX FABRICATORS		27911	116550.00
600001430.000	08/22/2007	NEW WASHINTON STATE		28469	600.88
600001430.000	08/22/2007	MAC CONSTRUCTION		28470	5407.92
600001430.000	11/30/2007	MAC CONSTRUCTION		29689	45710.84
600001430.000	12/30/2008	CITY OF CHARLESTOWN		34779	173041.00
600001440.000	06/25/2007	BILL BROUGHTON		2770	7596.55
600001440.000	06/25/2007	PHOENIX FABRICATORS		27768	206668.90
600001440.000	06/25/2007	NEW WASHINGTON		27769	22963.20
600001440.000	06/25/2007	BILL BROUGHTON		27770	1625.00
600001440.000	06/25/2007	PHOENIX FABRICATORS		27771	153460.35
600001440.000	06/25/2007	NEW WASHINGTON		27772	13272.55
600001440.000	08/08/2007	MAC CONSTRUCTION		28157	107698.77
600001440.000	08/08/2007	NEW WASHINGTON		28158	11966.53
600001440.000	08/20/2007	BILL BROUGHTON		28426	638.77
600001440.000	08/24/2007	MAC CONSTRUCTION		28499	24816.25
600001440.000	09/10/2007	PHOENIX FABRICATORS		28507	40449.90
600001440.000	09/21/2007	PHOENIX FABRICATORS		28764	128250.00
600001440.000	12/06/2007	PHOENIX FABRICATORS		29735	25807.10
600001440.000	12/17/2007	ABBOTTS LAWN		29791	1160.00
600001440.000	08/28/2008	PHOENIX FABRICATORS		33177	36501.53
600001440.000	10/01/2008	PHOENIX FABRICATORS		33522	85.00
600001440.000	10/01/2008	CLARK COUNTY		33523	115.00
600001440.000	03/05/2009	CHARLESTOWN WATER		35755	163835.43
SUBTOTAL 400					1486000.92
601001360.000	02/05/2006	WATER - BD & INT	WATER - CONTRACTUAL SERVICES	25971	2840.11
601001360.000	02/14/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	21610	359.02
601001360.000	02/14/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	21610	406.00
601001360.000	08/14/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	23677	324.00
601001360.000	08/14/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	23890	1310.00
601001360.000	08/14/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	23890	213.00
601001360.000	08/14/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	23890	1493.76
601001360.000	09/19/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	24263	6612.65
601001360.000	10/10/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	24525	1555.00
601001360.000	10/10/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	24532	5263.80
601001360.000	11/06/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	24930	9850.00
601001360.000	11/06/2006	LANDMARK	WATER - CONTRACTUAL SERVICES	24933	850.00
601001360.000	12/05/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	25189	4925.00

Installed by the CITY OF CHARLESTOWN-2012

Project History

All Projects

Project # 083.0000 thru 083.0000

Detail

601001360.000	12/21/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	25467	50.00
601001360.000	12/21/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	25468	25524.36
601001360.000	12/21/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	25468	8108.85
601001360.000	12/21/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	25468	3170.20
601001360.000	12/21/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	25469	4356.19
601001360.000	12/21/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	25469	2964.50
601001360.000	12/21/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	25469	1309.00
601001360.000	12/21/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	25469	1155.00
601001360.000	12/21/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	25469	693.00
601001360.000	12/21/2006	BARNES & THORNBURG	WATER - CONTRACTUAL SERVICES	25469	8523.17
601001360.000	12/21/2006	CROWE CHIZEK AND	WATER - CONTRACTUAL SERVICES	25470	18758.00
601001360.000	12/21/2006	CROWE CHIZEK AND	WATER - CONTRACTUAL SERVICES	25470	16910.00
601001360.000	12/21/2006	CROWE CHIZEK AND	WATER - CONTRACTUAL SERVICES	25470	8241.50
601001360.000	12/21/2006	CROWE CHIZEK AND	WATER - CONTRACTUAL SERVICES	25470	11700.00
601001360.000	12/21/2006	CROWE CHIZEK AND	WATER - CONTRACTUAL SERVICES	25470	30000.00
601001360.000	12/21/2006	CROWE CHIZEK AND	WATER - CONTRACTUAL SERVICES	25470	13499.00
601001360.000	12/21/2006	CROWE CHIZEK AND	WATER - CONTRACTUAL SERVICES	25470	6298.00
601001360.000	12/21/2006	CROWE CHIZEK AND	WATER - CONTRACTUAL SERVICES	25470	6805.17
601001360.000	12/21/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	25471	9850.00
601001360.000	12/21/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	25471	4925.00
601001360.000	12/21/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	25471	16350.00
601001360.000	12/21/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	25471	24625.00
601001360.000	12/21/2006	HANNUM WAGLE &	WATER - CONTRACTUAL SERVICES	25471	24625.00
601001360.000	06/22/2007	WELLS FARGO BANK NA	WATER - CONTRACTUAL SERVICES	27775	45878.73
SUBTOTAL 300					1816322.93
TOTAL EXPENDED					1816322.93

RECEIPTS

REVENUE	DATE	TITLE	DOC NUM	TOTAL RECEIPTS
601990.000	12/27/2006	WATER UTILITY - OTHER	20799	1816340.11
SUBTOTAL 900				1816340.11
TOTAL RECEIPTS				1816340.11

000110

Attachment DSC-5

Capital Asset Ledger for Water Utility

000111

Installed by the City of Charlestown, 0

Date: 08/08/2017 07:57:49
FORM211.FRX

CAPITAL ASSETS LEDGER

Order by Location Name, Asset Group, Subtotal by Asset Group with no Salvage Date

City and Town Form 211 (Revised 2003)

Date of Purchase	Description Include: Name of Department or Office if General Fund	Serial/ Identification Number	Location of Asset	Original Cost of Asset	Estimated Life of Asset	Date of Disposal of Asset	Amount Received on Disposal or Trade In	Types of Capital Assets						Total Capital Assets
								Land	Infrastructure	Buildings	Improvements Other Than Buildings	Machinery and Equipment	Construction in Progress	
05/19/2002	Scada System Antenna Hosp Tank	INV# 240 RIVER CITY C	WATER	8200.00	10		0.00					8200.00		8200.00
	Subtotal			8200.00			0.00					8200.00		8200.00
03/19/1999	1999 Case Backhoe 580L #5926	JJG0245926	WATER	60000.00	10		0.00					60000.00		60000.00
08/15/2005	2006 Ford F250 5989	1FTSX21P96EA 15989	WATER	29480.45	10		0.00					29480.45		29480.45
10/19/2005	2005 Chev Dump Tr 3295	1GBE4C1255F5 13295	WATER	42790.00	10		0.00					42790.00		42790.00
09/22/2005	2005 Trail King Tri 6908	1TKC024264B0 46908	WATER	9238.00	10		0.00					9238.00		9238.00
05/18/2005	2005 Cat Backhoe 4536	FDP24536	WATER	66288.00	10		0.00					66288.00		66288.00
	Subtotal AUTOS			207796.45			0.00					207796.45		207796.45
02/15/1938	Ins-building Water Company Chas. Landing	EST COST	WATER	8994.80	50		0.00			8994.80				8994.80
01/01/2008	Pump Station & House	Located at DA Inc.	WATER	150000.00	20		0.00				150000.00			150000.00
	Subtotal BUILDINGS			158994.80			0.00			8994.80	150000.00			158994.80
10/15/2002	Rc-generator	34698	WATER	1500.00	10		0.00					1500.00		1500.00
08/03/1997	Rc-wheeler Cast Iron Cutter 029828l	029828L	WATER	3000.00	10		0.00					3000.00		3000.00
04/26/1993	Rc-hydro Stop		WATER	18000.00	10		0.00					18000.00		18000.00
09/17/1999	Rc-briggs Stralon Pump Model 553swt	0960 91906	WATER	1300.00	10		0.00					1300.00		1300.00
04/23/1938	Rc-Water Tower Chas Land Road Rear Water		WATER	38000.00	50		0.00				38000.00			38000.00
11/24/1975	Rc-Hospital Water Tower		WATER	51000.00	50		0.00				51000.00			51000.00
12/01/2001	Ac-water Meters		WATER	96754.85	10		0.00					96754.85		96754.85
06/08/2007	Street Machine Kit w/software	Meter Reader	WATER	4100.00	5		0.00					4100.00		4100.00
06/18/2007	Hershey Hot Rod EZ Reader	Meter Reader	WATER	4100.00	5		0.00					4100.00		4100.00
01/01/2008	Radio Tansmitting Unit	ELpro 905U1 RTU	WATER	1641.00	10		0.00					1641.00		1641.00
02/25/2008	Signal Loop Isolator	Gospel Rd Water Tank	WATER	1154.00	10		0.00					1154.00		1154.00
10/13/2010	1986 Fiat Allis Ditch Witch	6B210B	WATER	12500.00	5		0.00					12500.00		12500.00

211000

CAPITAL ASSETS LEDGER

Order by Location Name, Asset Group, Subtotal by Asset Group with no Salvage Date

City and Town Form 211 (Revised 2003)

Date of Purchase	Description Include: Name of Department or Office if General Fund	Serial/ Identification Number	Location of Asset	Original Cost of Asset	Estimated Life of Asset	Date of Disposal of Asset	Amount Received on Disposal or Trade In	Types of Capital Assets						Total Capital Assets
								Land	Infrastructure	Buildings	Improvements Other Than Buildings	Machinery and Equipment	Construction in Progress	
11/17/2010	Front End Loader		WATER	11000.00	5		0.00					11000.00		11000.00
	Subtotal EQUIPMENT			244049.85			0.00				89000.00	155049.85		244049.85
10/21/2007	Charlestown Water Tank	Gospel Road	WATER	886191.00	50		0.00				886191.00			886191.00
	Subtotal IMPROVEMENTS O/T BUILDINGS			886191.00			0.00				886191.00			886191.00
06/01/1935	Se-water Main 12 In 46,542 Ft. $36.68 Ft.		WATER	1761561.00	50		0.00		1761561.00					1761561.00
06/01/1938	Se-water Pipes 60773 Ft 8in $34.54 Ft		WATER	2099099.42	50		0.00		2099099.42					2099099.42
06/01/1938	Se-water Pipes 6 In 18685 Ft 32.65 Ft		WATER	610065.25	50		0.00		610065.25					610065.25
05/01/2002	Se- Water Pipes Pl/Ridge 24076.6ft $32.65ft		WATER	786101.00	50		0.00		786101.00					786101.00
05/01/2007	SLC Water Meters		WATER	96321.00	5		0.00		96321.00					96321.00
10/21/2007	Water Tank Fence	403 At Gospel Road	WATER	11126.00	20		0.00		11126.00					11126.00
12/01/2007	Water Lines (Park Street-Gospel	2507- 003b	WATER	234685.00	50		0.00		234685.00					234685.00
07/06/2007	Pitpads and Readers	New Meters	WATER	6089.00	5		0.00		6089.00					6089.00
05/08/2007	SLC Water Meters	131@ 136.34 plus parts	WATER	18877.00	5		0.00		18877.00					18877.00
05/25/2007	SLC Water Meters	250@133.34	WATER	33335.00	5		0.00		33335.00					33335.00
04/01/2008	Danbury Oaks Water Meters	Water Meters	WATER	24358.00	5		0.00		24358.00					24358.00
09/01/2008	Water Tank System	Gospel Road	WATER	299933.00	50		0.00				299933.00			299933.00
02/01/2011	Restoration of Water Tank Clown Land	Wells, Lines, & Tank	WATER	233233.00			0.00		233233.00					233233.00
	Subtotal INFRASTRUCTURE			6214783.67			0.00		5914850.67		299933.00			6214783.67
07/17/1937	Land Water Tower @ Water & Main In Alley	18-8-0690	WATER	1000.00			0.00	1000.00						1000.00
01/15/1938	Land 2.5 Acres Water Co. Chas Landing Rd	EST COST	WATER	1725.00			0.00	1725.00						1725.00
	Subtotal LAND			2725.00			0.00	2725.00						2725.00
	Subtotal WATER			7722740.77			0.00	2725.00	5914850.67	8994.80	1425124.00	371046.30		7722740.77

CAPITAL ASSETS LEDGER

Order by Location Name, Asset Group, Subtotal by Asset Group with no Salvage Date

City and Town Form 211 (Revised 2003)

Date of Purchase	Description Include: Name of Department or Office if General Fund	Serial/ Identification Number	Location of Asset	Original Cost of Asset	Estimated Life of Asset	Date of Disposal of Asset	Amount Received on Disposal or Trade In	Types of Capital Assets						
								Land	Infrastructure	Buildings	Improvements Other Than Buildings	Machinery and Equipment	Construction in Progress	Total Capital Assets
	GRAND TOTAL:			7722740.77			0.00	2725.00	5914850.67	8994.80	1425124.00	371046.30	0.00	7722740.77
	Total Salvage Amounts:			0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GRAND TOTAL Less Total Salvage Amounts:			7722740.77			0.00	2725.00	5914850.67	8994.80	1425124.00	371046.30	0.00	7722740.77

Attachment DSC-6

Charlestown City Council Minutes for April 3, 2017, May 11, 2017,

July 3, 2017, and July 6, 2017

000115

MINUTES

THE COMMON COUNCIL

April 03, 2017

6:30 P.M.

THE REGULAR MEETING OF THE COMMON COUNCIL FOR THE CITY OF CHARLESTOWN WAS HELD ON MONDAY, APRIL 03, 2017 AT 6:30 P.M. AT CITY HALL WITH MAYOR G. ROBERT HALL PRESIDING.

Council members present were Mike Vaughn, Brian Hester, Eric Vaughn, Tina Barnes and Ted Little. Also present were Mayor Hall and Clerk Treasurer Donna Coomer. Absent was City Attorney Michael Gillenwater.

Pledge of Allegiance

Holly Jones

Invocation

LC McCawley

Agenda

Councilman Eric Vaughn made a motion approve the agenda, seconded by Councilman Little. Approved 5-0.

Minutes

Councilman Hester made a motion to approve the Minutes from March 06, 2017, seconded by Councilman Mike Vaughn. Approved 5-0.

Claims

Councilman Eric Vaughn made a motion to approve the Claims, seconded by Councilman Hester. Approved 5-0.

Payroll Allowance Docket

Councilman Little made a motion to approve the Payroll Allowance Docket from February 05, 2017 through March 04, 2017, seconded by Councilman Mike Vaughn. Approved 5-0.

Public Comment

None

Pathway to Home Ownership (Susan Riley)

Susan Riley
Re/Max Realty

Susan reported she had a closing last month and one scheduled this week. She has two more closings scheduled in April. There are 17 currently in credit repair and should be ready to purchase a house within the next three months. Renters are being denied because of their credit reports and landlords are being selective. Susan said they are working with the Housing Authority and Community Action of Southern Indiana. Some have old judgments and have been able to clean them up by getting paid receipts and sending them in to the credit companies.

Ordinance 2017-OR-05

Mayor Hall said this ordinance creates a 257 LOIT 2016 special distribution fund. We received $500,000.00 from Community Crossing and the state asked us to set up a special fund for the money.

Councilman Hester made a motion to approve Ordinance 2017-OR-05 on the first reading, seconded by Councilman Eric Vaughn. Approved 4-1. Councilwoman Barnes was a nay vote.

Ordinance 2017-OR-04

Mayor Hall said this ordinance transfers the matching grant funds of $500,000.00 from the Community Crossings grant into the 257 fund for the local road and bridges matching grant fund.

Councilman Mike Vaughn made a motion to approve Ordinance 2017-OR-04 on the first reading, seconded by Councilman Little. Approved 4-1. Councilwoman Barnes was a nay vote.

Councilwoman Barnes asked if the money being spent would allow the developer to access Pleasant Ridge. Mayor Hall said yes, the road will be used to access Pleasant Ridge.

Ordinance 2017-OR-06

Mayor Hall said this ordinance is premature and he will hold it until the next meeting.

Ordinance 2017-OR-07

Mayor Hall said this ordinance appropriates $340,000.00 for purchasing, demolishing and preparing property for the Renaissance Project from Main Street to High Street.

Councilman Eric Vaughn made a motion to approve Ordinance 2017-OR-04 on the first reading, seconded by Councilman Little. Approved 4-1. Councilwoman Barnes was a nay vote.

Ordinance 2017-OR-08

Clerk Treasurer Donna Coomer said this ordinance creates and establishes the 258 fund is a non-reverting fund and will be known as the Local Road and Bridge Matching Grant Fund.

This fund will receive monies from Local Road and Bridge Matching Grant Fund through INDOT and local matching funds transferred from the State of Indiana's LOIT Special Distribution Fund earmarked for local road improvements.

Councilman Little made a motion to approve Ordinance 2017-OR-08 on the first reading, seconded by Councilman Eric Vaughn. Approved 4-1. Councilwoman Barnes was a nay vote.

Springville Manor LLC

They were the only builders to submit a bid for 32 senior homes for a purchase price of $75,000.00 or less. They will build over 50 single family homes and the agreement will be presented at the next meeting. The seniors that don't have payments will not have payments but will have equity in their homes. They should start building in May.

Indiana American Water

Mayor Hall said American Water wants to purchase our water distribution system and the appraisal amount is 13.4 million. If we sell to outside water companies we still get the residual from it and we will still own our wells. On May 11th at 6:30 p.m. we will have an open meeting where conditions of the sale will be discussed. There will be 30 to 60 days before any action can be taken. Mayor Hall said he needs authorization to go into negotiations with the understanding it just produces a final project to vote on.

Councilman Little made a motion to approve for Mayor Hall to go into negotiations with American Water, seconded by Councilman Mike Vaughn. Approved 5-0.

River Ridge Road

Mayor Hall said River Ridge wants to put a road on Charlestown Landing by the Q-Huts. They need to cut through at a corner. They actually gave us the land for a dollar about 10 years ago. We are going to donate a section back.

Adjournment

Councilman Eric Vaughn made a motion to adjourn the meeting, seconded by Councilman Hester Approved 5-0.

G. Robert Hall 4-17-17

MAYOR, G. ROBERT HALL DATE

ATTEST:

Donna S. Coomer 4-17-17

CLERK TREASURER, DONNA S. COOMER DATE

MINUTES

THE COMMON COUNCIL

May 11, 2017

6:30 P.M.

A PUBLIC HEARING FOR THE CITY OF CHARLESTOWN WAS HELD ON THURSDAY, MAY 11, 2017 AT 6:30 P.M. AT CITY HALL WITH MAYOR G. ROBERT HALL PRESIDING.

Council members present were, Brian Hester, Eric Vaughn, and Ted Little. Also present were Mayor Hall, Clerk Treasurer Donna Coomer. Absent was Councilman Mike Vaughn. Councilwoman Tina Barnes arrived later, but was not present at the council table.

Pledge of Allegiance

Eric Vaughn

Speakers

- City Engineers, Bill Saegesser and Shane Spicer of Saegesser Engineering
- Dave McGimpsey, Bingham Greenbaum and Doll (Utility Attorney)
- Gary VerDouw (Director of Rates), Doug Brock (Vice-president of Operations), Bill Reedy (Southern Indiana Operations Manager) and Matt Prime (Director of Community Affairs), Indiana American Water

Saegesser Engineering

Mr. Shane Spicer spoke about challenges within the water distribution system, such as manganese in the water system, old pipes, water aging in dead end lines – which need to be looped, and a new water tank to replace a smaller tank. He discussed remedial actions that have been taken and some benefits that resulted. He reported that the cost of about 17 looping projects (to eliminate dead ends) and to improve some plumbing deficiencies on the Gospel Road tank is estimated to cost about 3.5 to 4 million dollars. He also discussed the 5 year plan to update water meters, replace hydrants, valve replacements, install high service pumps at the water plant, prepare for future growth and replace the hospital tank. He reported that if the City wants to continue to improve water quality and have an adequate system then in the 10 year plan, Phase 1 is estimated to cost 4 million and another 8 million by the time the plan is completed.

Mayor Hall

Mayor Hall said each year we assess what we are going to do and the next steps on improvements. It took about two years to develop a virtual model of the water system.

The Mayor discussed the water system and comparative rates (with other systems). He presented a proposal that could be considered, which would ease the impact of a significant water rate increase. Improvements needed to the system and other related matters were discussed.

Dave McGimpsey with Bingham Greenbaum and Doll (Utility Attorney)

Mr. McGimpsey discussed elements of contracts for sale of water utilities. He confirmed that no such contract has been approved by the City.

Mr. McGimpsey went on to discuss the types of matters that would need to be addressed in any contract for sale of the City's water utility, if that comes to pass.

Mayor Hall

Mayor Hall pointed out that the City will also be facing wastewater collection and treatment system improvements, and the anticipated costs of those improvements. In addition he discussed the fact that if the water utility is purchased by a private company the City could put it in a TIF district and possibly develop another TIF revenue stream.

Saegesser Engineering Appraisal Report

Mr. Bill Saegesser, the City's consulting engineer, explained the appraisal process and results from Clark Dietz and Bannon Engineering. They looked at our information and did field visits to inspect the system.
There were two properties that were not included in the appraisal. The property on Gospel Road was appraised by Biggs and Haire at $107,000.00. The hospital tank and the easement it is on appraised for $35,000.00.
The total appraisal for the water properties is $13.4 million dollars. Mayor Hall asked if this amount included the property the water tanks set on. Mr. Saegesser said it does not include the real estate. The appraisals are on file in the Clerk Treasurer's office.

Matt Prime Director of Community Affairs

Matt Prime (Director of Community Affairs) said we are here to talk about the sale of the water utility. There is no contract signed and we looking to be a partner with the City of Charlestown, to serve the needs of the community as far as the water quality. A study and analysis was done to identify the water aging, age of the pipes and other issues. If we purchase the utility we are looking to invest over two million the first year, with $800,000.00 to be used for capital improvements like replace valves, hydrants and maintain the system. We have over 300,000 customers and the capital improvements will not raise the rate as it is easier to do 2 million in capital improvements over 300,000 customers when Charlestown has 2,900 customers. We do participate in the (Indiana Utility Regulatory Commission (IURC) and have had no water violations for three years.

Public Comment

Those in attendance at this public gearing were invited to make comments about the possible sale of the City's water utility. Those who commented were:

Darlene Williams
219 Lindsey Street

Bill Crace
306 Randolph Street

Jim James
6105 Welsh Landing

Deanna Harney
1212 Morrow Street

Mayor Hall Closing Remarks

Mayor Hall discussed differences between a municipality water company and a private company and expressed opinions about some of the considerations involved before selling, or not selling, the water utility.

Adjournment

Councilman Eric Vaughn made a motion to adjourn, seconded by Councilman Little. Approved 3-0.

G Robert Hall — 6/5/17
MAYOR, G. ROBERT HALL — DATE

ATTEST:
Donna S. Coomer — 6/5/17
CLERK TREASURER, DONNA S. COOMER — DATE

MINUTES

THE COMMON COUNCIL

July 03, 2017

6:30 P.M.

THE REGULAR MEETING OF THE COMMON COUNCIL FOR THE CITY OF CHARLESTOWN WAS HELD ON MONDAY, JULY 03, 2017 AT 6:30 P.M. AT CITY HALL WITH MAYOR G. ROBERT HALL PRESIDING.

Council members present were: Brian Hester, Eric Vaughn, Ted Little, Mike Vaughn and Tina Barnes. Also present were Mayor Hall, Clerk Treasurer Donna Coomer and City Attorney Michael Gillenwater.

Pledge of Allegiance

Brooke Adams

Invocation

LC McCawley

Agenda

Councilman Eric Vaughn made a motion to approve the agenda, seconded by Councilman Little Approved 5-0.

Minutes

Councilman Little made a motion to approve the Minutes from 06/05/2017, seconded by Councilman Mike Vaughn. Approved 5-0.

Claims

Councilman Hester made a motion to approve the Claims, seconded by Councilman Eric Vaughn. Approved 5-0.

Payroll Allowance Docket

Councilman Little made a motion to approve the Payroll Allowance Docket from 06/04/2017 through 06/24/2017, seconded by Councilman Mike Vaughn. Approved 5-0.

Public Comment

Three people have signed up for public comment.

Mr. Jim James
6105 Welsh Landing - commented on the possible water utility sale.

Mr. Bill Crace
306 Randolph Street

Mr. Crace read a statement concerning the possible sale of the water utility.

Darlene Williams
1219 Lindsey Street

Ms. Williams spoke concerning the possible sale of the water utility

Attorney David Agnew
Lorch, Naville Ward Law Firm
New Albany Indiana

Mr. Agnew representing N.O.W. spoke concerning the possible sale of the water utility.

Mayor Hall addressed the history of the water during his administration, the improvements made, and the costs that would be incurred by the City to make repairs to the system. He also discussed needed improvements to the sewer system and the additional millions that will be needed to make those. He indicated the City intends to use a portion of the proceeds of the sale of the water utility for a credit to offset increases in utility charges.

Mayor Hall also commented on misinformation being spread about a number of things and pointed out that anyone can review City records; we have managed the budgets and not raised rates.

Indiana American Water President, Debra Dewey

Debra Dewey spoke about the company and how they received overall satisfaction in a survey rating in which, they ranked 2nd in overall customer satisfaction. They are in environmental compliance and they are 21% better than their counterparts.
They will do whatever it takes to give water customers clean water. Ms. Dewey asked if the Council had any questions and there were no comments.

Utility Attorney from Bingham, Greenbaum and Doll

Mr. David McGimpsey is representing the city on a contract for the water utility and said Mayor Hall indicated several things need to be in the contract.

1. Indiana American water will invest the funds of 7.2 million over 5 years and 2.3 million in the first 2 years be spent to fix the problem.
2. The city will still own and maintain the water source (wells).
3. The city can audit Indiana American Water on the investment or other matters once transaction is complete.

4. The city has the first right of refusal if Indiana American Water would come under foreign ownership or transfer their headquarters out of the USA.
5. The city will have the right to outsource water.
6. During the term of this lease there is a provision for the city to meet with Indiana American Water to discuss future water needs and all future mayors for the city will be protected by this agreement.

Mayor Hall described the City's four wells, their capacity, and actual usage. He was adamant that City wells will not be overused so that our water quality won't change.

Mayor Hall said one city employee will be offered employment with Indiana American Water.

Mayor Hall said we have two resources. We can condemn the water lines and buy them back. We can use the first right of refusal if they change ownership, whether foreign or domestic.

On the protection of the wellfield we don't want a private company to over-exercise our wells. We don't want the wells drained or to change the water quality.

Ordinance 2017-OR-11

This Ordinance approves an Asset Purchase Agreement and Well Field Lease Agreement and grants the Mayor authority to execute those documents.

Councilman Eric Vaughn made a motion to approve the Asset Purchase and Well field Lease Agreement on the first reading, seconded by Councilman Little. Approved 4-1. Councilwoman Barnes voted nay. Councilwoman Barnes asked for this ordinance to be tabled and no one seconded the motion.

Special Meeting

Mayor Hall said in anticipation of this Ordinance not passing, we advertised a special meeting on Thursday July 06, 2017 at 6:30 p.m. for a second and final reading.

Ordinance 2017-OR-10

This ordinance is for an additional appropriation for $26,145.00 to the animal shelter. This is the city's annual fee to use the JB Ogle animal shelter.

Councilman Little made a motion to approve Ordinance 2017-OR-10 on the first reading, seconded by Councilman Mike Vaughn. Approved 5-0.

Councilman Hester made a motion to suspend the rules on Ordinance 2017-OR-10, seconded by Councilman Eric Vaughn. Approved 5-0.

Councilman Little made a motion to approve Ordinance 2017-OR-10 on the second and final reading, seconded by Councilman Mike Vaughn. Approved 5-0.

Adjournment

Councilman Eric Vaughn made a motion to adjourn, seconded by Councilman Little. Approved 5-0.

MAYOR, G. ROBERT HALL — DATE 8-7-17

ATTEST:

CLERK TREASURER, DONNA S. COOMER — DATE 8-7-17

MINUTES

THE COMMON COUNCIL

July 06, 2017

6:30 P.M.

A SPECIAL MEETING OF THE COMMON COUNCIL FOR THE CITY OF CHARLESTOWN WAS HELD ON MONDAY, JULY 06, 2017 AT 6:30 P.M. AT CITY HALL WITH MAYOR G. ROBERT HALL PRESIDING.

Council members present were: Brian Hester, Eric Vaughn, Ted Little, Mike Vaughn and Tina Barnes. Also present were Mayor Hall, Clerk Treasurer Donna Coomer and City Attorney Michael Gillenwater.

Pledge of Allegiance

Ben Ledbetter

Official Business and Public Comment

Mayor Hall said there will be no other official business conducted tonight.
There were no requests for public comment.

Ordinance 2017-OR-11 - (Asset Purchase Agreement)

Mayor Hall this will be the second and final reading on Ordinance 2017-OR-11.

Councilman Little made a motion to approve Ordinance 2017-OR-11 on the second and final reading, seconded by Councilman Eric Vaughn. Approved 4-1. Councilwoman Barnes voted nay.

Adjournment

Councilman Eric Vaughn made a motion to adjourn, seconded by Councilman Little. Approved 5-0.

MAYOR, G. ROBERT HALL — DATE 8-7-17

ATTEST:

CLERK TREASURER, DONNA S. COOMER — DATE 8-7-17

Attachment DSC-7

Proof of Publication of Notice for Public Hearing

Prescribed by State Board of Accounts

City of Charlestown
(Governmental Unit)

Clark County, Indiana

To:
NEWS AND TRIBUNE
221 SPRING STREET
PO BOX 867
JEFFERSONVILLE, IN 47130

PUBLISHER'S CLAIM

NOTICE OF PUBLIC HEARING
CITY OF CHARLESTOWN
INDIANA

The City of Charlestown, Indiana (Charlestown), will hold a public hearing on May 11, 2017, at 6:30 p.m., in the City Council Chambers, City Hall, 304 Main Cross Street, Charlestown, Indiana, 47111, to consider the sale of Charlestown's water utility. The purposes of the public hearing are: 1) to review and explain the appraisal of Charlestown's water utility property; and 2) to receive public comment on the proposed sale or disposition of Charlestown's water utility property. Charlestown provides this notice of public hearing in accordance with Ind. Code § 8-1.5-2-5. A copy of the appraisal has been placed in the Charlestown Clerk Treasurer's Office, 304 Main Cross Street, Charlestown, Indiana, and is available for public inspection during regular business hours.

Donna Coomer
Charlestown Clerk Treasurer
Charlestown City Hall
304 Main Cross Street
Charlestown, Indiana 47111
(812) 256-3422 hspaxlp

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Pursuant to the provisions and penalties of IC 5-11-10-1, I hereby certify that the foregoing account is just and correct, that the amount claimed is legally due, after allowing all just credits, and that no part of the same has been paid.

I also certify that the printed matter attached hereto is a true copy, of the same column width and type size, which was duly published in said paper .....1..... times. The dates of publication being as follows:

.....4/11/17.....

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Date 4-12-17, ...

Legal Clerk

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Attachment DSC-8

Ordinance Approving Asset Purchase Agreement (without attachments)

BEFORE THE COMMON COUNCIL
THE CITY OF CHARLESTOWN, INDIANA

ORDINANCE No. 2017-OR- __11____

AN ORDINANCE APPROVING AN *ASSET PURCHASE AGREEMENT* AND *WELL FIELD LEASE AGREEMENT* AND GRANTING AUTHORITY TO MAYOR TO EXECUTE DOCUMENTS

WHEREAS, the City of Charlestown, Indiana (hereinafter the "City") is a third class city organized under the laws of the state of Indiana; and,

WHEREAS, the City currently owns and operates a potable water production and distribution system (hereinafter the "*System*"), which utility is operated and maintained under the oversight of the *Indiana Utility Regulatory Commission* (the "*IURC*"); and

WHEREAS, if the City chooses to divest itself of it's water utility, the City is entitled to sell the System per Indiana Code §8-1.5-2-1 *et seq.*; and,

WHEREAS, the City has investigated the condition and serviceability of the System and has discovered that there are areas within the City serviced by the System that have a greater frequency of complaints about water pressure and occasional poor water quality, largely due to the antiquated design of some parts of the System and the aging of water in the System; conditions that can only be remedied by costly upgrades and improvements of the System; and,

WHEREAS, all of the customers of the City's water utility are entitled to uniform high quality water, and adequate water pressure; and,

WHEREAS, due to the System's age and the obsolescence of some its component parts, the System is in need of significant and expensive maintenance, upgrades, and repairs that will require the investment of several millions of dollars into the System. If such maintenance, upgrades, and repairs are completed by the City's water utility, it will result in a significant increase in water rates to the City's water customers; and,

WHEREAS, municipally owned water utilities are required to operate in such a manner as to be financially self-supporting. It is improper for a municipal water utility to operate in a financial deficit. However, the City has not increased water rates of its water utility for a number of years; has the lowest water rates in the region; and, consequently the revenues produced by the City's water utility are

inadequate to provide for the costs of operating, maintaining, and improving the System; and

WHEREAS, federal and state laws and regulations governing the production, distribution and sale of potable water have become, and are continuing to become, more stringent. Consequently, a greater degree of technical and legal sophistication and expertise are needed to properly design, manage, operate, and maintain potable water distribution systems; and,

WHEREAS, because of the increasing costs associated with owning and operating potable water distribution systems, many owners of small water utilities have recognized that in the long term it is in the best interests of their customers that such small systems be sold to larger water companies having a greater technical and financial resources and expertise, which companies can often take advantage of the economy of scale to lower costs of operating, maintaining, and improving the smaller systems, especially when significant maintenance, upgrades, and repairs are needed to the smaller systems; and,

WHEREAS, the Common Council and City Executive have investigated and compared the advantages, disadvantages, costs and benefits of owning, operating, managing, upgrading, maintaining, and improving the System. Likewise, the Common Council has considered the advantages, disadvantages, costs and benefits of selling the System to a larger, more experienced, capable company, the *Indiana American Water Company, Inc.* (the "*IAWC*"); and,

WHEREAS, pursuant to Indiana Code §8-1.5-2-1 *et seq.*, on May 11, 2017, an advertised public hearing was held to discuss and receive comment about the possibility of the City selling its interest in the City's potable water production and distribution system; and,

WHEREAS, the Common Council believes that it is in the best long term interest of all of the water customers of the City's water utility to sell the City's water distribution system to the IAWC under the terms of an *Asset Purchase Agreement* attached hereto, marked as "**Exhibit A**", and incorporated by reference herein. Likewise the Common Council believes that it is in the best long term interest of all of the water customers of the City that the City lease part of its interests in the City's water production facilities pursuant to a *Well Field Lease Agreement* attached hereto, marked as "**Exhibit B**", and incorporated by reference herein; and,

IT IS, THEREFORE, ORDAINED by the Common Council of the City of Charlestown, Indiana, that the attached *Asset Purchase Agreement* (**Exhibit A**) and *Well Field Lease Agreement* (**Exhibit B**) are approved (subject to IURC review and approval) and that the Mayor is authorized to execute those documents, and any other documents necessary to complete the transactions described therein, on behalf of the City of Charlestown, with the intent that when/if such a sale is approved by the Indiana Utility Regulatory Commission that the City will consummate the sale of its interest in the City's potable water distribution system and will lease its interest in the City's well field in accordance with

the terms of those documents.

ALL OF WHICH IS ORDAINED on the _____ day of July, 2017.

Voted In Favor	Voted Against
Eric Vaughn	Eric Vaughn
Tina Barnes	Tina Barnes
Ted Little	Ted Little
Mike Vaughn	Mike Vaughn
Brian Hester	Brian Hester

Presented to Mayor G. Robert Hall on the 6th day of July, 2017.

Donna Coomer
City Clerk/Treasurer

SEEN AND APPROVED BY ME THIS ON THE 6th DAY OF July, 2017.

Mayor G. Robert Hall

ATTEST:

7-6-17
Date

Donna Coomer
City Clerk/Treasurer

VERIFIED REBUTTAL TESTIMONY OF DONNA S. COOMER ON BEHALF OF THE CITY OF CHARLESTOWN, INDIANA

Cause Nos. 44976 and 44964

Q. Please state your name, occupation and business address.

A. My name is Donna S. Coomer. I am the elected Clerk-Treasurer of the City of Charlestown, Indiana ("Charlestown"). My business address is City Hall, 304 Main Cross Street, Charlestown, Indiana 47111.

Q. Are you the same Donna S. Coomer that offered direct testimony in this Cause?

A. Yes, I am.

Q. What is the purpose of your rebuttal testimony?

A. My testimony rebuts the testimony of NOW!, Inc.'s ("NOW") witness, Michael Williams ("Williams").

WILLIAMS' TESTIMONY

Q. Have you reviewed the testimony of Williams offered by NOW in support of its Case in Chief?

A. Yes.

Q. In his testimony, Williams discusses accounting exceptions found during the 2008-2009 audit performed by the State Board of Accounts ("SBOA"). Were you the elected Clerk-Treasurer of Charlestown at the time of the 2008 – 2009 audit?

A. Yes.

Q. Have you reviewed the 2008-2009 audit performed by the SBOA, including the audit exceptions identified therein?

A. Yes.

Q. Did any of the audit exceptions identified in the 2008-2009 audit relate in any way to Charlestown's water utility?

A. No.

Q. Have any audits of Charlestown been conducted by the SBOA since the 2008-2009 audit?

A. Yes. The SBOA conducted audits of Charlestown's finances for 2010 and 2011, and it is currently conducting an audit of Charlestown's 2012 - 2016 finances. I expect the current SBOA audit to be completed in the next few months.

Q. Have any audit exceptions been identified in any SBOA audits of Charlestown since the 2008-2009 audit?

A. No.

Q. **Williams seems to suggest that, because exceptions were found in the 2008-2009 audit, exceptions should have been found in the 2010 and 2011 audits and will be found in the current audit. Do you agree?**

A. No.

Q. Why not?

A. First, this suggestion is simply not supported by the facts. The SBOA conducted audits in 2010 and 2011 and did not identify any audit exceptions. I have no reason to doubt their conclusions. Second, there is no other evidence which would suggest that the conclusions of the 2010 and 2011 audits were wrong or that the SBOA's judgment was somehow flawed. Third, Williams stated that he only reviewed "some" of the materials relevant to his assertions about the continued existence of audit exceptions. Williams' admittedly less than thorough review undermines, in my view, his ability to criticize the SBOA's 2010 and 2011 audit results. I am aware of no fact supporting the conclusion that the 2010 and 2011 audits were not thorough or otherwise conducted up to normal SBOA standards.

CONCLUSION

Q. Does this conclude your rebuttal testimony at this time?

A. Yes, it does.

Verification

I hereby verify under the penalties for perjury that the foregoing representations are true to the best of my knowledge, information and belief.

Signature: Donna S. Coomer
Donna S. Coomer

Dated: 11-20-17

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EXHIBIT A

CHARLESTOWN MUNICIPAL WATER UTILITY
Charlestown Indiana

Balance Sheets as of May 31, 2005, December 31, 2004 and 2003

	May 31, 2005	December 31, 2004	December 31, 2003
ASSETS AND OTHER DEBITS			
Utility Plant			
Utility Plant in Service	$ 6,012,772	$ 6,012,772	$ 6,012,772
Less: Accumulated Depreciation	(1,887,331)	(1,731,172)	(1,669,222)
Net Utility Plant	4,125,441	4,281,600	4,343,550
Restricted Assets			
Guarantee Meter Cash Fund	55,744	52,583	59,574
Current and Accrued Assets			
Operating Fund	3,494	51,283	7,221
Accounts Receivable - Customer	(11,110)	(796)	28,782
Accounts Receivable - Hydrants	11,568	115,552	106,876
Other Special Deposits	-	(84,000)	(84,000)
Reimbursements	-	(32,055)	(32,055)
Interest Receivable	-	-	-
Due From Other Funds	-	(5,000)	(5,000)
Prepaid Expenses	17,298	15,502	15,502
Total Current and Accrued Assets	21,250	60,486	37,326
Total Assets and Other Debits	$ 4,202,435	$ 4,394,669	$ 4,440,450

Q 3.6. Please refer to Attachment GRH-2 (Table 1) of Joint Petitioner's Exhibit 1, the Verified Direct Testimony of G. Robert Hall. For each line of Table 1 (e.g., 16-inch D.I. / LF / 14,546 / $105.00 / 1,527,330, etc.), please list all assets from the Capital Assets Ledger (Attachment DSC-5) that are included in that line.

Objection: The City objects to the Data Request on the basis of the foregoing general objections. The City objects to the Data Request on the basis that the Data Request seeks information not in the possession of the City and not within the personal knowledge of the City. The City objects to the Data Request on the separate and independent grounds and to the extent that the Data Request seeks the City to perform an analysis that it has not already performed and the City objects to performing such analysis.

Response: The Capital Assets Ledger was not used as a basis for the appraisal (see, *e.g.*, responses to Q 3.5 and 3.8 hereof), and is provided as evidence of the City's original cost for utility plant. The City has not performed an analysis of which plant from the Capital Assets Ledger is included in Table 1 of Attachment GRH-2.

Joint Petitioner's Exhibit 3

VERIFIED DIRECT TESTIMONY OF WILLIAM A. SAEGESSER ON BEHALF OF THE CITY OF CHARLESTOWN, INDIANA

Cause No. 44976

Q. Please state your name, occupation and business address.

A. My name is William A. Saegesser. I am the president of Saegesser Engineering, Inc. My business address is 88 W. McClain Avenue, Scottsburg, Indiana, 47170.

Q. Please describe your educational background.

A. I received a B.S. in Engineering Technology from Southern Illinois University, School of Engineering and Technology in 1973.

Q. Please describe your professional experience.

A. I have over 44 years of experience in civil engineering and land surveying responsible for most types of public works, civil, and environmental engineering, including potable water treatment, storage, and distribution.

Q. Are you a registered professional engineer in Indiana?

A. Yes. I hold Indiana licensed professional engineer license number PE60018499.

Q. What is your relationship with the City of Charlestown, Indiana ("Charlestown")?

A. Saegesser Engineering, Inc., has served on a consulting basis as Charlestown's City Engineer starting our most recent tenure in that capacity in 2008. Our work for Charlestown has included potable water treatment, storage and distribution, wastewater collection and treatment, storm water control, planning and zoning assistance, and building design, among other types of work.

Q. What is the purpose of your testimony?

A. My testimony provides an engineering explanation for Charlestown's decisions and actions with respect to its water utility and supports the proposed transaction between Charlestown and Indiana-American Water Company, Inc. ("Indiana-American") wherein Charlestown would dispose of its water utility assets through a sale and a lease to Indiana-American (the "Proposed Transaction").

Q. What attachments are you sponsoring?

A. I sponsor the following attachments:

Attachment WAS-1: Saegesser Engineering Study

Attachment WAS-2: Updated Project Costs

Attachment WAS-3: Title Work

Attachment WAS-4: Indiana Army Ammunition Plant Map

Attachment WAS-5: Easement for Right of Way for Water Wells

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CHARLESTOWN'S WATER UTILITY & BROWN WATER PROBLEMS

Q. Please provide an overview of Charlestown's water utility.

A. Charlestown's water utility serves a little over 2,800 customers, and is made up of assets consisting of a well field with 4 wells and related equipment, a transmission main, a water treatment plant, 3 water storage tanks, approximately 55 miles of distribution mains, and other related infrastructure. Water is pumped from the well field through a raw water transmission main to the city where it is chemically treated primarily to disinfect the water before it is pumped throughout the distribution system.

Q. What causes the brown water?

A. Manganese and mineral build up in the distribution system are the primary cause of the brown water. The water pumped from Charlestown's well field has a small amount of naturally occurring manganese and other minerals. For several decades, Charlestown's storage tanks and distribution system collected minerals in the system, which were not removed by regular flushing and cleaning. The accumulation of the mineral deposits predominately occurs in the system's water storage tanks and dead end water lines in the distribution system. When the system experiences upsets, such as line breaks, fire events, and similar occurrences, the sudden increase of water flow from those events breaks loose the manganese and other minerals, which in turn discolor the water in the system.

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Q. How has Charlestown remediated brown water in the past?

A. Charlestown voluntarily elected to introduce polyphosphates and Clearitas (to reduce corrosion and sequester minerals, such as iron and manganese) to the raw water. Clearitas is a chemical treatment that removes organic and inorganic deposits in water distribution systems. This effort along with an aggressive flushing program has significantly reduced the number of brown water events. Despite the improvements in water quality gained by the Clearitas and polyphosphate treatment and the flushing program, it will take a number of years for these agents and the flushing program to remove the large quantity of mineral deposits that still remain in the system.

Q. What is the next step in remediating the brown water?

A. To more aggressively address the brown water issue, Charlestown plans to reduce the water age in the system, which also contributes to the creation of brown water. Charlestown plans to accomplish this by eliminating all dead end lines in the distribution system, by eliminating all dead end storage through a dedicated main to Charlestown's Gospel Road elevated storage tank, by replacing undersized mains, by adding additional storage, by replacing fire hydrants and by making other related system improvements. Dead end lines and dead end storage provide areas within the distribution system where minerals settle out of the water and become deposited within the distribution system. By reducing dead end lines and

dead end storage, water age will be reduced and the occurrences of mineral settling out of the water will likewise be reduced. Likewise, replacing undersize mains, adding water storage, and replacing fire hydrants will help to remove the manganese and minerals from the distribution system.

Q. How much will those improvements cost?

A. The preliminary opinion of probable costs for the improvements identified in my previous response, including professional fees (engineering, survey, design, rate consultant, bond counsel, etc.) and construction of the needed improvements, amounts to $7.2 million.

Q. Have you prepared a study identifying the projects included in the $7.2 million?

A. Yes. Attachment WAS-1 is the engineering study Saegesser Engineering, Inc., performed to determine the preliminary opinion of probable costs. It identifies the projects that in general include the Gospel Road Storage Tank and looping system improvements within Charlestown's distribution system. I have updated the costs of the needed projects, and those updates are shown on Attachment WAS-2.

Q. What will the expenditure of $7.2 million in infrastructure improvements do to Charlestown's rates?

A. While I am not a financial advisor, investing $7.2 million into Charlestown's water utility system, which counts less than 2,900 customers, will require a significant increase in rates and charges.

Q. Why isn't a filtration plant part of the near-term infrastructure solution you have identified?

A. The discoloration of water primarily results from mineral deposits in the distribution system caused by decades of failure to flush mains and clean water storage infrastructure. A water filtration plant would not be the highest and best use of the ratepayers' money at this time because when that filtered water would be introduced into Charlestown's existing distribution system, it would encounter the same mineral deposits that Charlestown's existing source water encounters when pumped through the distribution system. At some point in the future, a water filtration plant could very well be a prudent expenditure. Right now, however, a filtration plant will not eliminate the brown water because the distribution system creates the brown water, and the highest priority for expending funds on capital assets is in the distribution system.

Q. Could Charlestown solve its brown water problem with water from a different source?

A. No. As I testified earlier, the brown water problems result from a distribution system problem. Water meeting all primary and secondary treatment standards

when leaving the water treatment plant would still risk encountering mineral deposits and turning brown when it passes through Charlestown's distribution system.

CHARLESTOWN & THE PROPOSED TRANSACTION

Q. Are you familiar with the Proposed Transaction?

A. Yes. I was involved in the public process and the negotiations leading up the asset purchase agreement and well field lease agreement. At the public hearing, I reviewed and explained the appraisal for those in attendance and made myself available to answer questions.

Q. Do you believe that the Proposed Transaction is in the best interests of Charlestown and its residents?

A. Yes. It is my opinion that the sale of the assets will serve the best interests of Charlestown's residents and ratepayers in terms of rates, operation and maintenance of the water utility system, and in assuring that Charlestown's short-term and long-term water needs are met. Being able to meet future residential, commercial and industrial water needs is vitally important when considering the significant amount of new investments being made in Charlestown resulting from the construction and recent opening of the Lewis and Clark (East End) Ohio River Bridge. If Charlestown spends $7.2 million to upgrade its existing water utility system, Charlestown will have very little capacity to further invest in its water

utility system due to the rate pressure such investments will put on Charlestown and its ratepayers. When viewed holistically with the measures Mayor Hall testifies to concerning the sewer bill credits and other sewer rate mitigation measures, Charlestown is setting itself up for competitive utility costs and the corresponding growth that will derive from having competitive utility costs.

Q. Are there other reasons why you believe the Proposed Transaction is in the best interests of Charlestown and its residents?

A. Yes. As the Professional Engineer appointee of the Common Council of the City of Jeffersonville, Indiana, I have served on the City of Jeffersonville Sanitary Sewer Board since 2006, serving along with the then-sitting mayors of Jeffersonville (Mayors Waiz, Galligan, and now Moore) and the second City Council appointee. In that capacity, we have worked closely with Indiana-American representatives on issues ranging from water usage data to implementing measures to ensure payment of utility bills. Indiana-American has been a good partner in that relationship, and I believe Indiana-American's service in Jeffersonville is indicative of the type of service that Charlestown residents, ratepayers, and elected officials will experience when dealing with Indiana-American going forward. None of the private water industry horror stories I have heard from those speaking in opposition to the Proposed Transaction at the public hearing have occurred during my work with Indiana-American over the last 11 years as part of the City of Jeffersonville Sanitary Sewer Board.

Q. Were the negotiations leading up to the execution of the Agreement conducted at arm's length?

A. Yes.

WELL FIELD OWNERSHIP

Q. Are you familiar with Charlestown's rights to its well field?

A. Yes. Charlestown acquired ownership to its well field in 1937 by virtue of a warranty deed (the "1937 Warranty Deed"). As part of its preparations for the Proposed Transaction, Charlestown had title work run on its well field to confirm ownership. The title work is attached as Attachment WAS-3. The deed of record for Charlestown's well field was recorded in Deed Book 135, page 96 in the Office of the Recorder of Clark County, Indiana. The 1937 Warranty Deed is included in the title work at page WAS3-085 of Attachment WAS-3. One of Charlestown's four wells is situated on the real estate identified in the 1937 Warranty Deed.

Additionally, I have inspected other records that demonstrate Charlestown's ownership of the well field. Attached as Attachment WAS-4 is a Final Project Ownership Map prepared by the U.S. Army for the Indiana Army Ammunition Plant in 1944, and revised through September 27, 1963, that clearly identifies a parcel of land as the "City Owned Well Site". Attachment WAS-4 consists of 3 pages. The first is the map without any references by me. The second page is the

same map with a red box drawn on it, and the third page is the area within the red box magnified so it is easily readable.

Q. Does Charlestown own all of the real estate used for its wells?

A. Charlestown does not own all of the real estate used for its wells. Charlestown holds what is titled as an "Easement for Right of Way for Water Wells" granted by the United States Department of the Army in 1978. The Easement for Right of Way for Water Wells is attached as Attachment WAS-5. The Easement for Right of Way for Water Wells authorizes wells in two 75' by 75' plots of land. Further, I note that when the U.S. Army took title to the real estate surrounding Charlestown's well field, the deed it received from E. I. Du Pont De Nemours and Company specifically excluded Charlestown's well field in Exception Number 4, which is shown on page WAS3-082 of Attachment WAS-3 (the deed begins on page WAS3-077). Accordingly, the U.S. Army never took title to the property conveyed to Charlestown in the 1937 Warranty Deed. From my understanding of real estate law, the U.S. Army could therefore not convey an interest in the property subject to the 1937 Warranty Deed to a subsequent interest holder because the U.S. Army never acquired an interest therein.

Q. What do you believe Charlestown has authority do with its rights to the well field?

A. It is my understanding that Charlestown could sell outright the property it owns in fee, but it cannot sell the property subject to the Easement for Right of Way for Water Wells. Rather, Charlestown has chosen to lease its well field to Indiana-American as part of the Proposed Transaction. I believe Charlestown can lease the real estate it owns in fee subject to the 1937 Warranty Deed. Charlestown needs approval of the property owner to lease the real estate subject to the Easement for Right of Way for Water Wells as set forth in Paragraph 21 of the Easement for Right of Way for Water Wells. The proposed Well Field Lease Agreement sponsored by Indiana-American witness Mr. Matthew Prine in his Attachment MP-3 includes a provision in Section 18 that addresses the need for approval of Charlestown's proposed lease and extension of its rights under the Easement for Right of Way for Water Wells.

CONCLUSION

Q. Does this conclude your direct testimony at this time?

A. Yes, it does.

Verification

I hereby verify under the penalties for perjury that the foregoing representations are true to the best of my knowledge, information and belief.

Signature: _____ Dated: 8/17/17
William A. Saegesser

Attachment WAS-1

Saegesser Engineering Study

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SINCE 1808

CHARLESTOWN

INDIANA

City of Charlestown Water System Evaluation

Prepared by: J. Shane Spicer, P.E.

SAEGESSER ENGINEERING, INC.

Civil Engineering & Land Surveying

Prepared for: City of Charlestown

March 2016

Contents

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Executive Summary

This evaluation has been developed to identify improvement projects to enhance water quality throughout the City of Charlestown. At this time there are no known primary water quality issues. However, secondary water quality concerns associated with manganese concentration and associated nuisance effects are common.

Recommendations made throughout this report were derived from field observations, employee interviews and hydraulic models. Data collected from field tests were used to calibrate the model to insure accuracy.

When evaluating a distribution system's performance one of the primary variables considered is water age. High water age can degrade water quality and endanger the safety, health and welfare of the community. The chemicals used in water treatment have a finite life. As the treated water approaches a critical age, chemical reactions may degrade leaving the system vulnerable to undesired health and aesthetic effects.

Both field and forecasted model data indicate potential for high water age within the distribution system. The projects presented in this study have been tailored to address this deficiency. High water age problems generally arise from dead-end water mains and dead-storage areas.

To facilitate an understanding of how the following recommendations and evaluations were derived, this study includes a cursory overview of how water distribution and treatment processes work. Preliminary budgets are presented to facilitate the decision making process. Rate impacts are also considered based on these preliminary budgets.

Background

Approximately three (3) years ago Saegesser Engineering, Incorporated (SEI) was commissioned by the Charlestown Board of Works to develop a water distribution map and hydraulic model using G.I.S. technology. Preliminary forecasts developed by the model indicated deficiencies in the current distribution system. In early 2015, these preliminary model runs and observations were used to develop a Preliminary Engineering Report that documented the early findings.

In spring of 2015, the Charlestown Board of Works commissioned SEI to further refine the preliminary model runs with the goal of identifying projects and associated opinions of cost. This brings us to the context of this report.

Distribution and Treatment Practices

The sophistication of a water treatment process depends upon the characteristics of the source water. The source water may be either surface, groundwater or blended. Once the water is treated it is then pumped from the treatment facility to elevated storage tank(s). The storage tanks then deliver water to the end-user through a system of pipes referred to as the distribution system.

In the case of Charlestown, the source water is the Ohio River Aquifer. Water from the aquifer is pumped to a 1.5 million-gallon ground storage tank where it is held for processing. From there, four (4) chemicals are injected to treat the source water. These are chlorine, fluoride, polyphosphate and Clearitas. Chlorine and fluoride are required by state and federal law for disinfection and dental health

purposes, respectively. The City elects to inject polyphosphate and Clearitas on a voluntary basis to improve water quality.

Phosphates may serve two (2) purposes, these are to reduce corrosion and sequester elements such as iron and manganese. Corrosion control is established through the generation of a protective layer or coating, that adheres to the interior of plumbing. This acts as a barrier to corrosive actions, reducing dissolution of elements such as lead. Polyphosphates are commonly used as a sequestering agent for treatment of groundwaters with low to moderate levels of iron and/or manganese. Polyphosphates are typically not used for corrosion control.

Sequestering is a chemical reaction of metals that transforms particulate iron and manganese from a solid state to a dissolved state. In the dissolved or soluble form, the metals are undetectable and do not create nuisance effects.

Clearitas, along with a flushing program was introduced in early 2012. The primary goal of Clearitas is to remove the iron and manganese buildup that has developed along the interior of the distribution system's pipe walls. With approximately 55 miles of distribution piping, replacing all the water mains within the city is not feasible. Clearitas and the flushing program were implemented in order to avoid line replacement.

After the water is treated it is pumped from the plant to the distribution system where it is stored in two (2) elevated storage tanks. These tanks are located at the hospital and Gospel Road. The Hospital Tank is a 120,000-gallon elevated stand-pipe. This tank also serves as what is referred to as the "lead" tower. When the Hospital Tank reaches a set low elevation it makes a call to the water plant to start the treatment process and to turn on the pumps to supply the system. Once the tank reaches a set high elevation, it makes another call to the plant turning off the pumps and treatment process.

The Gospel Road Tank is a 500,000-gallon elevated storage tank. The Gospel Road Tank is used for storage supply.

Observations of Current Practices

Background

The source of the elevated manganese concentrations that lead to nuisance complaints is subject to debate. The contention consists of two arguments that "explain" the water quality issue. One argument concludes that the brown water occurrences are due to the lack of a filtration process. The other contention cites the distribution system as the source of the aesthetic problems.

Portions of the distribution system were constructed some 75 years ago. Over this period of time a significant amount of manganese has coated the lining of numerous pipes within the system. Many of these mains are still active.

Filtration proponents contend there is too much manganese in the raw source water to treat it only by chemical means. A study of the aquifer was developed by the Wittman Hydro Planning Associates in 2010. That study purported portions of the aquifer contains high level concentrations of iron and manganese and may require filtration. Plant operation data does not support this conclusion.

This evaluation considers this debate through consultation of standard practice methodologies, and through conclusions deduced from observations and reasoning based on operational records and model forecasts, experience and engineering judgement.

Water Quality Standards

EPA establishes National Primary Drinking Water Regulations (NPDWRs). NPDWRs are legally binding standards that apply to public water systems. These standards protect drinking water quality by limiting the levels of specific contaminants that can adversely affect public health. These standards are called "maximum contaminant level" (MCL); the highest level of a contaminant that is allowed in drinking water as established by the NPDWR.

In addition, EPA has established National Secondary Drinking Water Regulations (NSDWRs) that set non-mandatory water quality standards for 15 contaminants. EPA does not enforce these "secondary maximum contaminant levels" (SMCLs). They are established only as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. These contaminants are not considered to present a risk to human health at the SMCL.

Public water systems are not required to test for these contaminates, but are urged to do so on a voluntary basis. If these contaminants are present in water at levels above these standards, the contaminants may cause the water to appear cloudy or colored, or to taste or smell bad.

Secondary standards are set to give public water systems guidance on removing these chemicals to levels that are below what most people will find to be noticeable.

There are a wide variety of problems related to secondary contaminants. These problems can be grouped into three categories:

- Aesthetic effects — undesirable tastes or odors;
- Cosmetic effects — effects which do not damage the body but are still undesirable;
- Technical effects — damage to water equipment or reduced effectiveness of treatment for other contaminants.

Standard practices of water treatment are introduced in the following section. These standards are useful for determining the required level of treatment needed to meet these drinking water criteria.

Standards of Practice for Water Treatment

The sophistication of the required treatment process depends upon the raw water source and characteristics, such as pH, alkalinity, and other compounds, minerals, and elements found in the raw water. Groundwater sources are generally preferred as they typically require less processing and chemicals. Filtration for groundwater sources may or may not be required depending upon the concentration of iron, manganese and calcium. The use of filtration is generally recommended when the sum of the iron and manganese concentrations exceeds 1.0 ppm. Other sources further refine the use of filtration as a recommendation when iron concentration exceeds 0.3 ppm, and/or manganese concentration exceeds 0.1 ppm. Below these levels, chemical sequestering is generally the only treatment required to address secondary contamination levels.

Regardless of the type of source water, all treatment processes must include disinfection. Generally, chlorine is used for this purpose. Fluoride is also injected in many cases as a dental health measure.

Placement of chemical injections impact the quality of the finished water. Polyphosphate feed locations should be separated from the chlorine injection point by as much distance as possible. The phosphate feed point should be ahead of the chlorine injection. If polyphosphate is fed after chlorine, there is a possibility that iron and manganese will be oxidized before sequestering can occur, allowing iron and manganese precipitants to be released into the distribution system.

Current Treatment Practices

Charlestown's source water is the Ohio River Aquifer. This water is pumped from the well field where it is stored in a 1.5 million-gallon storage tank where it is held for processing. From there four chemicals are injected, these are: chlorine, fluoride, polyphosphate and Clearitas. Currently, the plant does not include filtration.

The quality of the source water has been investigated, most recently in a report developed by the Wittman Hydro Planning Associates in 2010. That study purported that portions of the aquifer contains high level concentration of iron and manganese and may require filtration. Plant operation data does not support this conclusion. Per operation data, raw manganese concentrations range between 0.03 and 0.5 ppm; with the average being below recommended filtration levels. Iron values range typically less than 0.1 ppm. With consideration given to these data, as well as the standards of practice, the use of chemical sequestering to address secondary limits appear to continue to be a viable means of operation.

Observations of Current Treatment

As mentioned previously in this report, the EPA and IDEM set a secondary standard concentration for manganese of 0.05 ppm. Figures 1 and 2 provide information concerning plant and distribution system manganese concentration levels. Figure 1 provides average concentration data, of both plant and system, from April 2012 through November 2013. During this time, the treatment plant was operating well below the secondary contaminant level of 0.05 ppm. Conversely a much higher concentration of manganese was present in the distribution system.

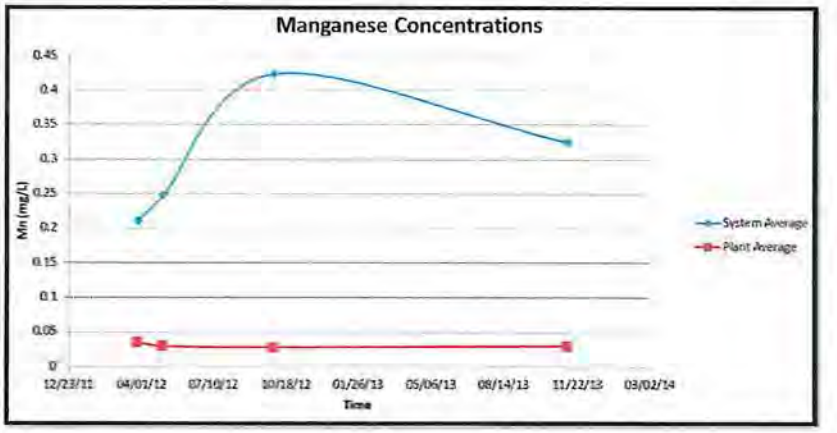

Figure 1 – System and Plant Manganese Concentration

2015 operation data is provided in Figure 2. Review of these data indicate an increased level of manganese leaving the treatment plant, as compared to the 2013-2014 data. In some instances, the source water manganese concentration is lower than the treated level. There are three scenarios that

could account for the decline in plant performance, these are: change in source water characteristics, reduced effectiveness of the sequestering reaction, and manganese sludge buildup in the ground storage tank.

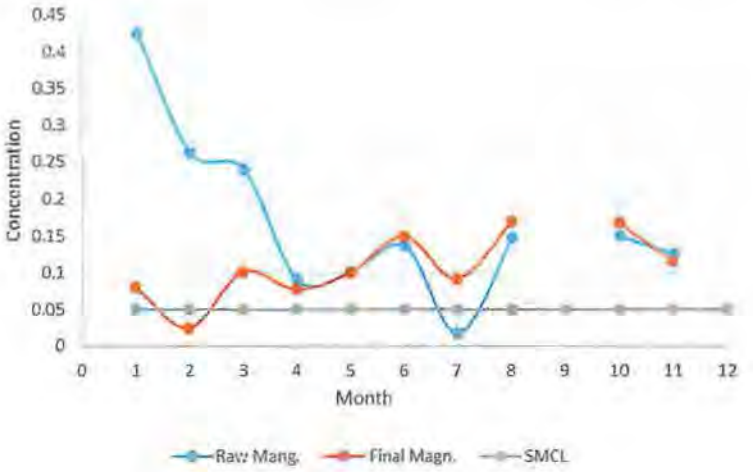

Figure 2 – 2015 Raw and Finished Manganese

Review of plant data indicates no significant change in the iron or manganese concentrations found in the source water. Through deduction, this would exclude the source water characteristics as the origin.

As noted earlier in this report, all chemical injection occurs at the treatment plant. Spacing between injection sites are limited and in close proximity to one another. However, there has been no changes in dosing or location of chemical injection sites that would explain the decline in performance.

The most likely source of the decline in performance is the ground storage tank. The tank was last cleaned and inspected over five-years ago. It is possible that manganese has built up and formed a sludge blanket in the bottom of the tank. If this is the case, it would greatly reduce the sequestering efforts. It is recommended that the tank be inspected to verify for the purposes of trouble shooting.

Summary and Recommendations for Treatment

Review of operation data indicate source water manganese concentrations range between 0.03 and 0.5 ppm; with the average being below recommended filtration levels. Iron values range typically less than 0.1 ppm. These data and considerations given to standards of practice support the continued use of chemical sequestering to meet secondary contamination limits.

Options should be explored to increase spacing of chemical injection. Proper spacing of chemical injection is critical to water quality. At this time, all chemicals are dosed in close proximity. Of primary concern is the dosing locations of chlorine and polyphosphate. Spacing the dosing sites further apart may yield better results in terms of polyphosphate's sequestering capabilities. Opportunities should be explored to dose chemicals further apart.

The 2015 plant records indicate higher than normal levels of manganese escaping the treatment process. This may be associated with a buildup of manganese sludge within the ground storage tank. It has been over five (5)-years since the last tank inspection. It is recommended that the tank be inspected and cleaned if necessary.

In conclusion, the primary or immediate objective is to have the ground storage tank inspected. Further observations and recommendations may be needed pending findings of the tank inspection.

Observation of Distribution Operations

Background

Over the life of the distribution system, a buildup of manganese has developed on the interior linings of the system's piping. It is not feasible to replace the water mains in the system considering that the network is comprised of approximately 55 miles of lines. In February of 2012, the City began introducing Clearitas, a chemical commonly used to clean the interior of pipes. Along with the cleaning treatment, a flushing program was also introduced to expel the displaced manganese.

The City has been logging complaint calls associated with brown water occurrences. Figure 3 plots the total number of complaints recorded back to 2011. Through this period, the highest number of recorded calls occurred the first year of injecting Clearitas; with approximately 275 logged complaints. Since 2012 the number of "brown water" reports have declined. The lowest year recorded was 2013 with a little over 100 complaints. Calls increased somewhat in 2014 and 2015, with 2015 being slightly lower than 2014.

Figure 3 – Annual Complaint Calls

While fluctuations in complaints have occurred, the overall trend is down, indicating that the flushing and chemical cleaning programs are making a positive impact on water quality. Fluctuations may be reduced as the city further refines the flushing program. As the pipes are cleaned, the buildup breaks free from the lining of the walls, if flushing is not performed at the correct time, aesthetic issues may arise. Timing of the flushing program is being adjusted by the city as the behavior of the cleaning process is better understood.

Complaint records were also plotted on a monthly basis, see Figure 4. The blue bars indicate the total number of calls recorded for each month. The orange bars indicate how many of the total calls were associated with some sort of system upset or high flow demand such as line breaks and fire demands.

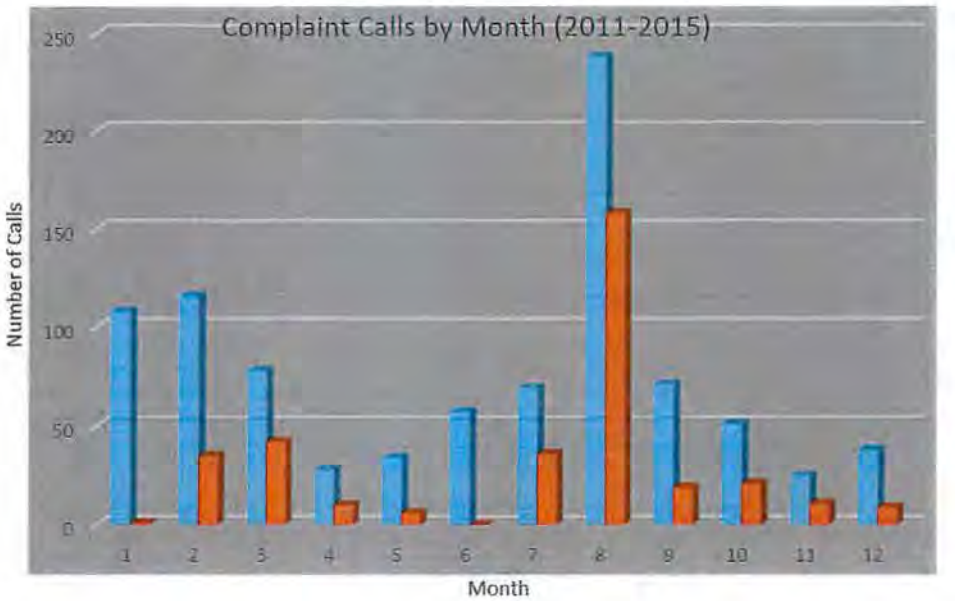

Figure 4 – Monthly Complaint Calls

By visual inspection, perhaps 50% of the "brown water" complaints are associated with these scenarios.

Figure 5 further provides insight on the distribution system's potential impact concerning nuisance complaints. The average manganese concentration in the distribution system exceeds the treated plant levels.

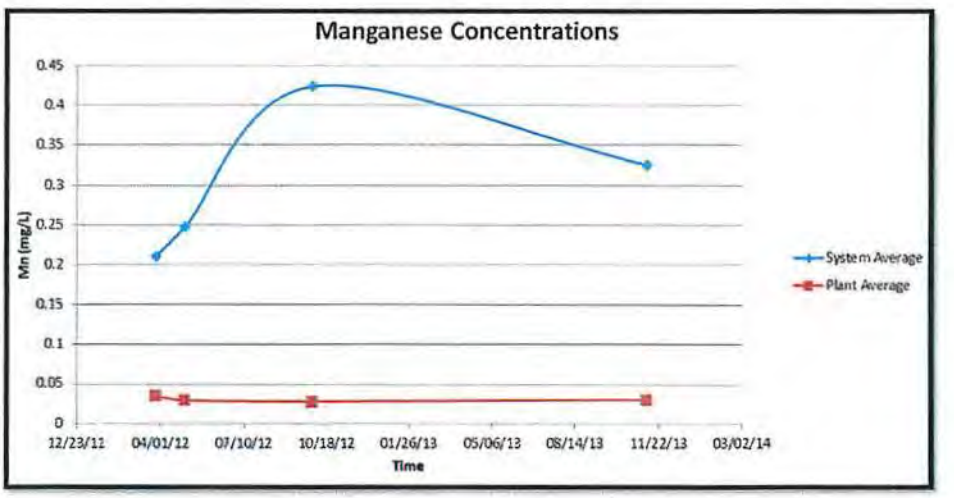

Figure 5 – System and Plant Manganese Concentration

Through deduction of the records presented, it is plausible to assume that during high demand or system upsets associated with line breaks, manganese is scoured from the pipe lining and released into the distribution system resulting in nuisance complaints.

Figure 6 plots the addresses from which complaint calls have been logged. While complaints occur throughout the city, the concentration of reports are centered around Highview Lakeview, Pleasant Ridge, Glendale and west Charlestown.

Figure 6 – Complaint Locations

Model Results – Water Age

Figure 7 is the modeled water age based on the current distribution system. Water age varies dramatically over the distribution system, ranging from 24-hours nearest the plant to as great as 30-days. From this forecast, the Highview Lakeview neighborhood, along with Glendale, Pleasant Ridge and residents along west Highway 403, are exposed to the oldest water in the system.

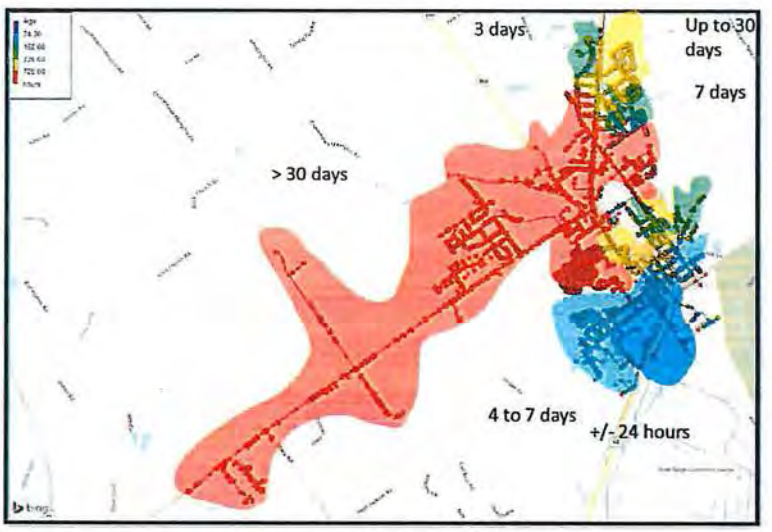

Figure 7 – Existing Water Age Map

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As presented earlier, chemicals used to treat water last for a finite period before they break down. As the treated water approaches a critical age, the chemical reactions stop working. Two primary concerns that arise from high water age are chlorine residuals and breakdown of the sequestering process. Low chlorine residuals are a primary health concern, as the chance for bacteria growth increases. Secondary concerns associated with nuisance effects are also more likely to occur.

While there are no specific mathematical formulas or models to predict the life of sequestering agents, some resources claim that if the total detention time in the distribution system exceeds 72 hours, the phosphates may break down and release the iron and manganese into the system. These particulates then settle out and build up as sludge in dead-ends and dead storage areas. During high system demands or upsets, water from these areas may be pulled back into the system, mixing the sludge with fresher water and creating nuisance occurrences.

Gospel Road Tank Operation

The operational head range of the tank is provided in Figure 8. The range provided in the figure was derived from model runs and were compared to records reviewed at the treatment plant. Both the forecasted and field data match, indicating an operating head range of approximately 1-foot per day.

The height of the water extends approximately 30-feet above the bottom of the tank. A water age of 30-days can be calculated based on the operational range and water height. A water age of this magnitude implies that the Gospel Road Tank is a source of dead storage.

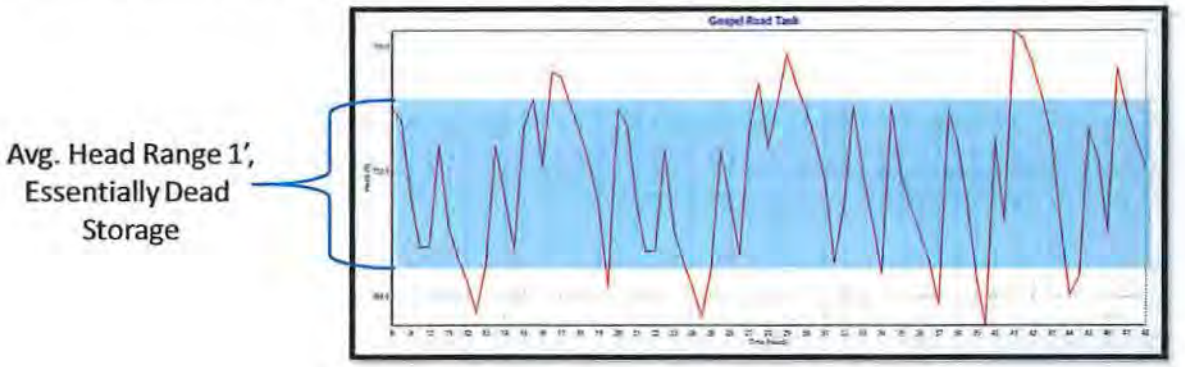

Figure 8 - Gospel Road Tank Operation Range

A tracer model was developed to pinpoint the influence area of the Gospel Road Tank. The area highlighted in red represents the influence area of the Gospel Road Tank. As shown in Figure 9, this accounts for approximately two-thirds of the distribution system. Within this area, roughly 90% of the water has been either directly in contact with the tank, or has been in contact with water discharged from the tank.

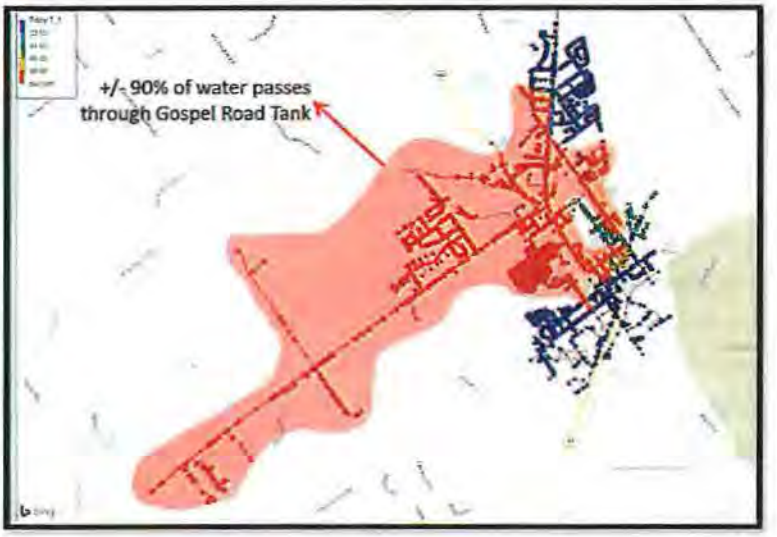

Figure 9 – Gospel Road Tank Influence Map

Summary and Recommendations for Distribution Practices

The majority of the water age concerns may be linked to the apparent dead storage of the Gospel Road Tank and dead-end mains. This would account for the concentration of complaints around Highview Lakeview, Pleasant Ridge and west Charlestown. Glendale's nuisance issues are likely unrelated to the Gospel Road Tank. Review of system maps and interviews with employees indicate there are many dead-end mains located within the city, concentrated in the Glendale neighborhood. The primary quality concern is aesthetics; however, excessive water age could be a source of bacterial growth.

The primary objective of improvement projects focusses on the reduction of water age by eliminating and/or reducing the amount of dead-end mains as well as dead storage areas. Reducing the dead-ends will also benefit the flushing program. Currently, several areas of town cannot be accessed for proper flushing due to the lack of circulation presented by the dead-ends.

Upon completing the looping projects, it is recommended that the Gospel Road Tower be converted to the lead tank. This should be done in efforts to speed up the turnover rate of the tower. In order to accomplish this two (2) tasks need to be completed. The controls of the distribution system will need to be modified recognizing the Gospel Road Tower as the lead. Secondly, a dedicated water main is required. This dedicated main would start at the treatment plant and connect directly to the Gospel Road Tower. The current distribution system configuration does not provide a direct path for water to travel through the system to fill the tank. Water would age in the system as it is "pushed" through and eventually filling the tower.

Proposed Projects

Background

Distribution system improvements include two priorities these are the reduction/elimination of dead-end mains, and the reduction/elimination of dead-storage. By doing so, water age within the distribution system will be reduced significantly. In return, this will improve water quality by increasing the effectiveness of the chemical treatment process. In addition, storage areas for sludge buildup will

be decreased, further reducing the potential for brown water occurrences during system upsets or high demands.

The following sections provide a list of proposed projects and potential impacts. The following sections also provide a preliminary budget of each project. Considerations on rates and possible funding sources will be presented in the following section of this report.

Dead-End Main Reduction (Looping)

Primary focus of looping is to eliminate or reduce the amount of dead-end mains throughout the city. To offset costs, phasing of projects may be a logical approach. With this consideration, looping projects have been broken down into two (2) categories or Tiers. Tier I Projects are typically larger in scale and provide a more holistic impact on water age throughout the system. Tier II projects are generally smaller in scale and impacts are more localized to neighborhoods as compared to system wide.

Project Location	Quantity (lf)	Subtotal
Market St. (Oriole Drive to Short St.)	1,120	$129,920.00
Intersection of Market and Monroe	165	$ 21,450.00
Memphis Road	2,600	$301,600.00
Halycon Road	1,800	$208,800.00
	Total	$661,770.00

Figure 10 - Tier I Looping Projects

Project Location	Quantity (lf)	Subtotal
Market and Edgewood	70	$ 6,475.00
Bates Drive	400	$ 47,200.00
Saddleback Drive	200	$ 23,600.00
Church Street	230	$ 27,140.00
Lisa/Hodge	250	$ 29,500.00
Lisa/Glendale Drive	80	$ 9,440.00
Lafawn Drive	340	$ 40,120.00
Locust St.	740	$ 87,320.00
Fulkerson/Melanie Lane	450	$ 53,100.00
Denham Lane	205	$ 24,190.00
4th St.	150	$ 13,875.00
3rd St.	110	$ 11,000.00
Brentview	150	$ 13,875.00
Fulkerson Dr.	260	$ 30,680.00
	Total	$ 417,515.00

Figure 11 - Tier II Looping Projects

Model runs indicate an approximately 20% reduction in age upon completion of both Tier I and II projects. Maximum water age decreases from 30-days to 20-days. The forecasted or modeled water age map is shown on the next page as Figure 12.

Figure 12 - Water Age (Looping Only)

Aside from age reduction, another benefit of the looping projects that the models cannot detect is the increased efficiency that would be realized in the flushing program. Currently there are many areas that cannot be properly flushed due to lack of access created by the dead-ends. With the dead-ends removed, flushing will be much more efficient.

Gospel Road Project

The main source of dead storage appears to be the Gospel Road Tank. Approximately two-thirds of the system is influenced by water that has either passed through or have come into contact with water that has discharged from the tank.

On average the tower's water level fluctuates about 1-foot per day. The height of the water level from the bottom of the tank to the surface is about 30-feet. Given this low turnover rate condition water age of up to 30-days, or greater, could be released from the tower.

The following figures provides a side-by-side comparison of the influence and age maps. By comparison, the footprints are identical. From this it is plausible to assume that the Gospel Road Tower is a potential source of water quality concerns.

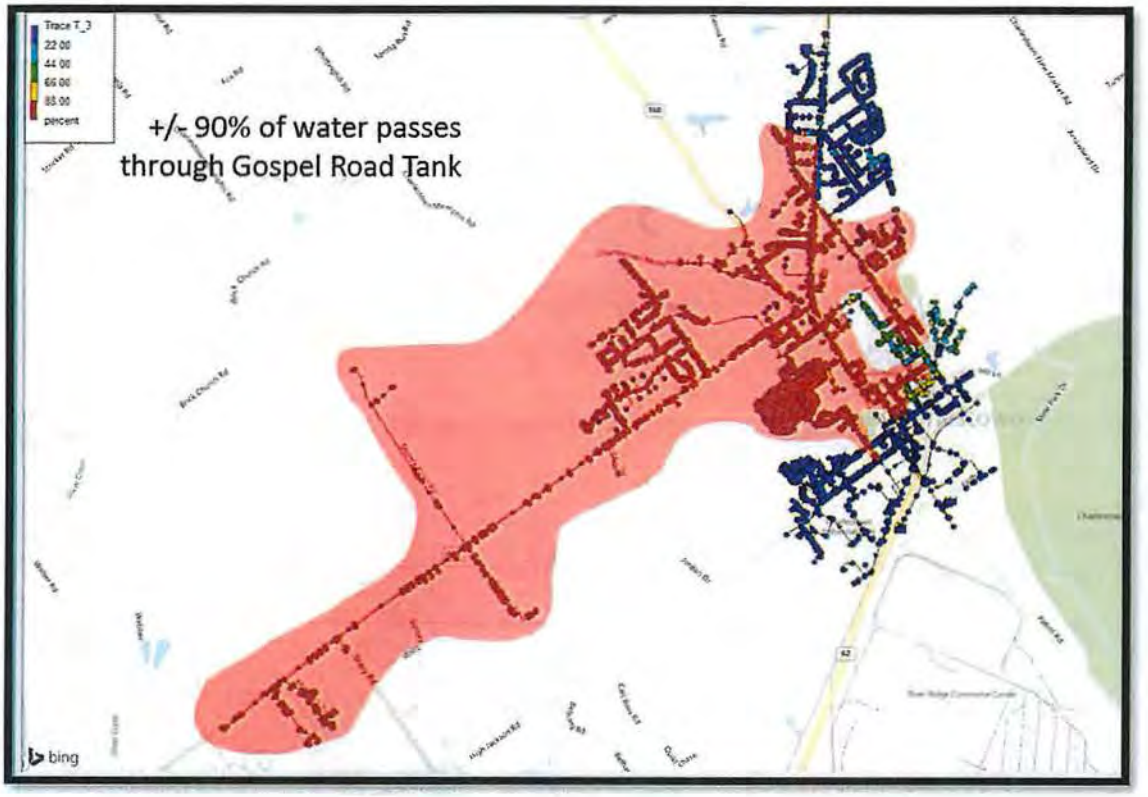

Figure 13 - Gospel Road Tank Influence Map

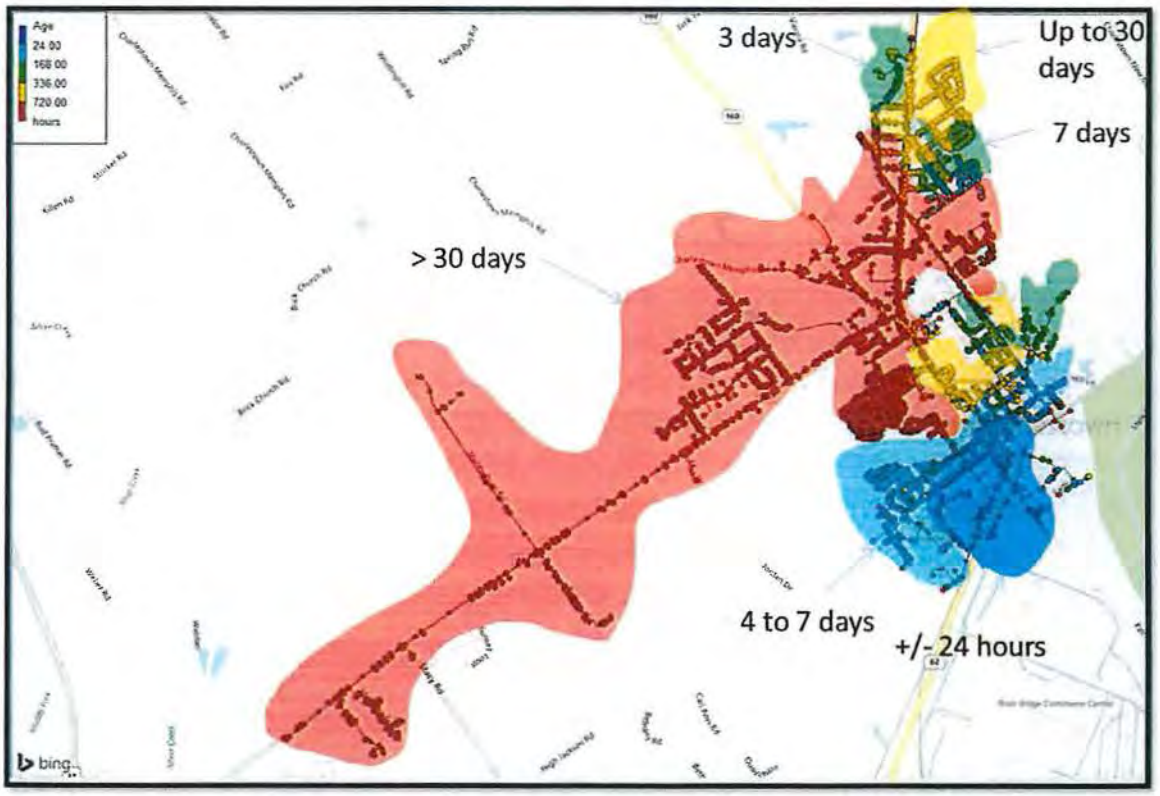

Figure 14 - Existing Water Age Map

The dead-storage concerns can be addressed by converting the Gospel Road Tank to the lead tank. The existing distribution system plumbing offers no direct route. As currently plumbed, water would be "pushed" through the system in an indirect manor allowing the water to age. To insure the tower functions properly, and to insure the goal of water age reduction is achieved, a dedicated line bypassing the existing system plumbing is required.

After looping and conversion of the Gospel Road Tower a reduction in water age by as much as 90% is likely. The highest water age that we would anticipate is 7 days at the far western end of the system.

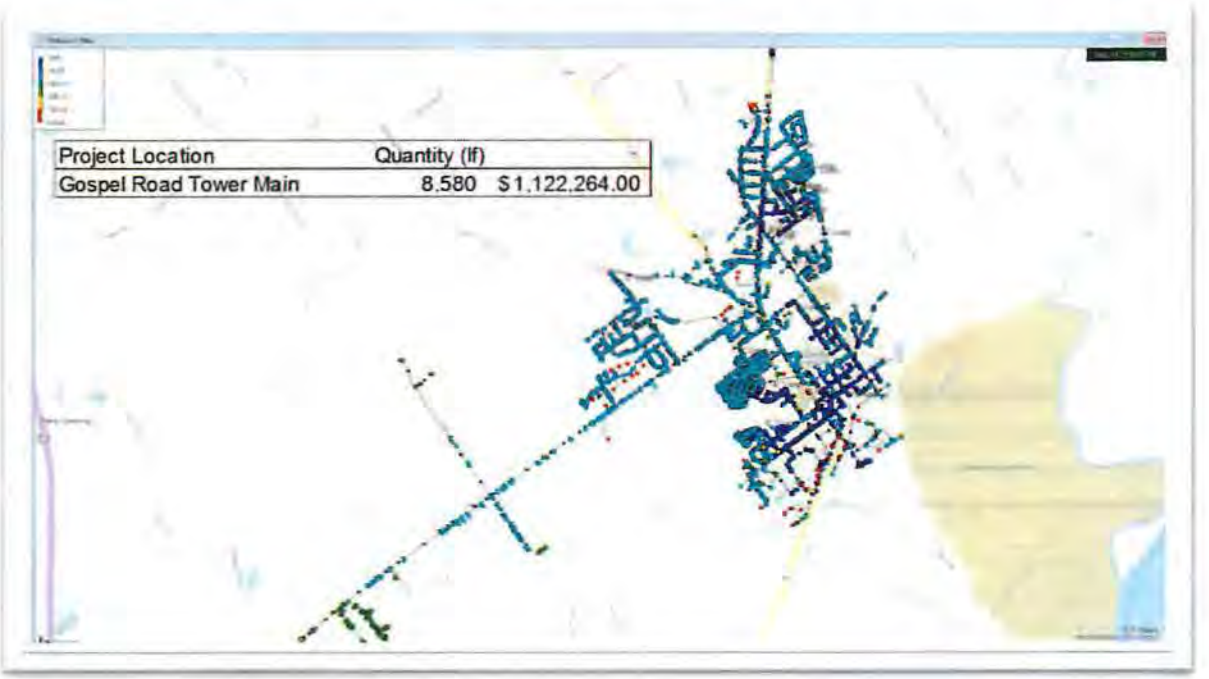

Figure 15 - Forecasted Water Age

Another benefit gained with this project is that the dedicated main could increase the footprint of the treatment operations. Currently all chemicals are injected at the same location at the plant. Polyphosphate effects are greatly reduced as soon as it comes into contact with chlorine, ideally these chemicals should be dosed as far apart as possible. This is represented graphically by Figures 16 and 17 on the following page.

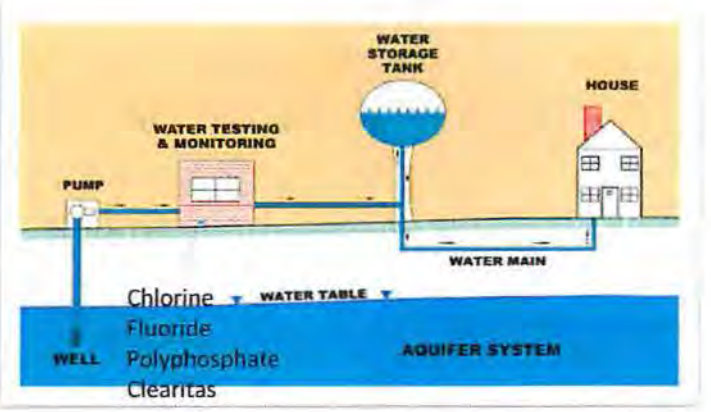

Figure 16 - Chemical Injection Locations

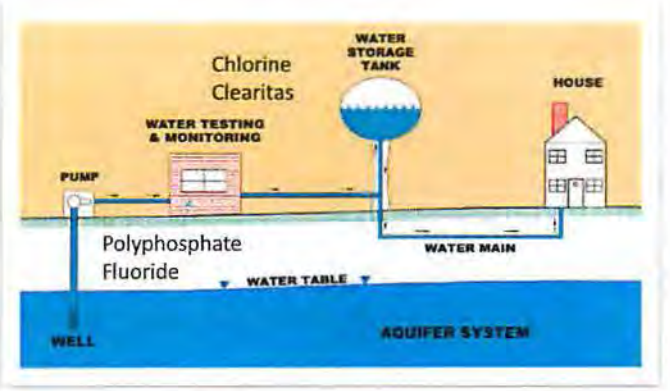

Figure 17 - Proposed Chemical Injection Sites

By having a dedicated non-potable water main injection sites could be spaced further apart, e.g., by injecting polyphosphate at the plant and chlorine just before the tower. This would increase the efficiency of the chemical treatment process, and could result in additional water quality benefits.

Funding

Background

This section provides sources of funding that are typically associated with these types of projects.

Existing Rate Structure

The current rate structure was approved by the Indiana Utility Regulatory Commission on August 16, 2006, per Cause No. 42878. A 29.42% increase was granted to cover deficits and for the construction of the now Gospel Road Elevated Storage Tank. The water rates schedule was ratified by the Charlestown City Council per Ordinance Number 2005-OR-12. For the purposes of this evaluation, the entire rate schedule was not considered, only Section I, Part A.

Under subsection A, the rate per 1,000 gallons, for use under 10,000 gallons per month, is $3.66; minimum charge for use under 2,000 gallons is $7.32 plus tax.

Preliminary Opinions of Cost

Costs for the projects considered in this report were derived from 16 years of bids solicited for similar work within this area. Due to the budgetary nature of these opinions, costs have been rounded up to the nearest one-hundred thousand dollars.

Tier I Projects: $700,000

Tier II Projects: $500,000

Gospel Road Tank Conversion: $1,200,000

Aggregate Total: $2,400,000

Loan Programs

The Indiana State Revolving Fund (SRF) offers an attractive low interest rate program for both drinking water and wastewater projects. It may be possible that grants could also be received to help offset costs. It is not uncommon that SRF loans are accompanied with grants through Indiana Office of Community Rural Affairs (IOCRA).

The assumptions made for purposes of estimating annual payment costs are based on SRF terms, i.e., loan term is twenty (20) years; interest rate assumed 3%. The estimated rate increases do not include costs associated with required debt reserves, or any operations and maintenance reserves that may be required by the loan and/or grant. To compensate for this, the interest rate of 3% was used to surrogate additional costs by neglecting such reserves.

Annual revenue requirements based on test year of 2015. Aggregate revenue estimated at $900,000; gallons produced – 246.5 million gallons.

A. Tier I annual payment: $47,051.00
B. Tier II annual payment: $33,607.85
C. Combined Tier I & II annual payment: $ 80,658.85
D. Gospel Road Project annual payment: $80,658.85
E. Aggregate Total Payment: $161,317.70 (C+D)

Aggregate estimated revenue and rate per 1,000 gallons.

A. $947,051.00 required revenue: $3.84 per 1,000 gallons (4.69% increase)
B. $933,607.85 required revenue: $3.79 per 1,000 gallons (3.43 % increase)
C. $980,658.85 required revenue: $3.98 per 1,000 gallons (8.04 % increase)
D. $980,658.85 required revenue: $3.98 per 1,000 gallons (8.04 % increase)
E. $1,061,317.70 required revenue: $4.31 per 1,000 gallons (15.08 % increase)

Grant Programs

IOCRA grants have certain criteria for eligibility, these are dependent on the findings of an income survey, user rates and project budget. It is anticipated that the maximum grant award that the City of Charlestown is eligible for is $500,000 for a project over one-million dollars; and $400,000 for projects less than one-million dollars. Typically, larger projects are awarded grant amounts closer to the maximum amount.

Additional Considerations

Overview

The purpose of this report is to identify projects that could be planned and completed within a five (5)-year period. The Preliminary Engineering Report developed in 2015 identified additional projects that would likely occur beyond this five (5) – year horizon. These considerations are provided in the following section.

Additional Storage Capacity

As the City of Charlestown continues to expand north, additional water supply will be required. The existing stand-pipe has limited capacity and will likely not be sufficient for future needs. In addition, the stand-pipe elevation is set lower than most elevated storage tanks. This causes low pressure problems in and around the tanks immediate area. To meet the volume demand, a new elevated storage tank should be constructed. The tank should be elevated such to provide a minimum 60 psi pressure in around the tank service area. Due to the topography of the city, the new elevated tank will require the system to be divided into pressure zones. One zone will be controlled by the Gospel Road Tower, the second by the new elevated tank.

This will be a costly project for several reasons. Splitting the system into pressure zones will require a detailed design insuring that pressure release valves are positioned in appropriate locations. A dedicated service main to the tank will also be needed. This could be accomplished by continuing the Gospel Road Tower service main. The cost of the tank itself is also considered, along with appropriate supervisory controls needed to run the tower from the treatment plant. The estimated cost to perform this work is $3,500,000. This includes the new main, tower and controls. This cost does not include purchase of land or right-of-way if required.

Undersized Water Mains

As noted in the Preliminary Engineering Report prepared in 2015, the system currently includes many undersized water mains. Standards of practice recommend the minimum water main size to be 6-inches. This is specified to insure the system has adequate capacity in the water lines to supply volumes of water associated with such events as fire flows. Pressure stability may be affected if mains are undersized. Unstable pressure may lead to line breaks, scouring of biofilm buildup from pipes that may cause nuisance complaints, and cross-contamination as pressure becomes too low or negative.

Due to the quantity of undersized mains, it does not appear feasible to upgrade all lines below 6-inches. Replacement of these mains should be considered under operation and maintenance of the system. As repairs are needed in these locations, they should be upsized to the minimum or equivalent size needed to serve the purpose of the time.

Summary and Conclusion

This report detailed the scope of projects required to reduce water age, therefore improve the water quality and reduce the amount of nuisance complaints. The existing system's current configuration includes many areas of dead-end lines which contribute to these effects. In addition, the Gospel Road Tower appears to be a source of dead-storage further compounding the problem.

For the purpose of meeting the current goals to improve water quality and preparing the system for growth, this report presents the Tier I and II projects along with the Gospel Road Tank conversion as top priorities. Implementation of these projects first are critical to not only improve existing water quality, but to also prepare the system for growth.

Attachment WAS-2

Updated Project Costs

City of Charlestown Water Utility

Project Summary & Updated Costs

Project Years	Project	Cost	Total
2017-18	Loops and Gospel Rd. Tank Conversion	$ 3,000,000.00	
2017-18	Autoread Meters	$ 650,000.00	
2017-18	Hydrants	$ 175,000.00	
			$ 3,825,000.00
2017-18	Well Upgrades	$ 250,000.00	
2017-18	Plant Upgrades	$ 750,000.00	
			$ 1,000,000.00
2017-18	Main Replacements	$ 2,000,000.00	$ 2,000,000.00
2017-18	Contingency	$ 375,000.00	$ 375,000.00
	Total		$ 7,200,000.00

Prepared under the direction of William A. Saegesser, Saegesser Engineering, Inc.

000174

VERIFIED REBUTTAL TESTIMONY OF WILLIAM A. SAEGESSER ON BEHALF OF THE CITY OF CHARLESTOWN, INDIANA

Cause Nos. 44976 and 44964

Q. Please state your name, occupation and business address.

A. My name is William A. Saegesser. I am the president of Saegesser Engineering, Inc. My business address is 88 W. McClain Avenue, Scottsburg, Indiana, 47170.

Q. Are you the same William A. Saegesser that offered direct testimony in this Cause?

A. Yes, I am.

Q. What is the purpose of your rebuttal testimony?

A. My testimony provides rebuttal to the testimony of NOW!, Inc.'s ("NOW") witness Robert Isgrigg. I have reviewed the pre-filed testimony and exhibits of NOW's witnesses and the Indiana Office of the Utility Consumer Counselor (the "OUCC") witnesses. Additionally, I participated in the discovery process both answering data requests and reviewing data request responses received from other parties.

Q. What attachments are you sponsoring?

A. I sponsor the following attachments:

WAS-1R:	Article: Dead-end flushing of a distribution system: Short and long-term effects on water quality
WAS-2R:	Data Request Responses of NOW to Q1.13 to 1.15
WAS-3R:	AWWA Manual M32: Computer Modeling of Water Distribution Systems
WAS-4R:	Sludge Volume Calculation of William A. Saegesser
WAS-5R:	Data Request Responses of NOW to Q1.3 to 1.5
WAS-6R:	Data Request Responses of Charlestown to OUCC Q5.6
WAS-7R:	Consumer Confidence Report of DNR Plant (showing 2 mgd treatment plant capacity)
WAS-8R:	October 2017 Monthly Report of Operation for DNR Plant

NOW POSITIONS IN GENERAL

Q. What are your overall takeaways from Mr. Isgrigg's testimony?

A. Initially, I note that Mr. Isgrigg claims at 1:25 of his testimony that he was retained to evaluate the proposed sale from an "engineering perspective." His attachments consist of a copy of a quitclaim deed, some data request responses, and some documents related to the contract that Mayor Hall already indicated in his direct testimony that he canceled. Most important to note about Mr. Isgrigg's attachments is this: no engineering report, study or other form of evaluation or any documentation whatsoever. Rather than provide hard evidence of the claims

he makes throughout his testimony, Mr. Isgrigg instead produces a sensationalized, political and legal narrative consisting of unsupported conclusions that are purportedly developed from investigations and reports performed nearly 40 years ago, not to mention his unwarranted attacks on the work of Saegesser Engineering, Inc., and its engineers. Without supporting documents, it is impossible to fully address the validity of his claims. However, one thing is clear: if the fixes were as easy as Mr. Isgrigg indicates, he would have implemented them in the 1970s.

Another general point I need to make is that holding a professional engineer's license reflects that the holder of the license has accepted both the technical and the ethical obligations of the engineering profession. The practice of professional engineering includes planning, designing, composing, evaluating, advising, reporting, directing or supervising that requires the application of engineering principles and that concerns the safeguarding of life, health, property, economic interests, the public welfare or the environment, and the managing of any such act. I do not believe Mr. Isgrigg has upheld that standard in filing the testimony he pre-filed in verified form. Mr. Isgrigg's testimony contains conclusions that are made without supporting engineering documentation, test results, or other demonstration of engineering principles and practices.

REAL ESTATE ISSUES

Q. Mr. Isgrigg discusses the Charlestown well field deed and easements at 2:7-18 of his testimony. What do you make of his statements?

A. There is nothing of note concerning the deeds and easements. Mr. Isgrigg indicates that consents from the Indiana Department of Natural Resources ("DNR") may be required to transfer certain rights. Whether or not Mr. Isgrigg is correct, if the consent of the DNR must be obtained prior to transfer, the City of Charlestown ("Charlestown") will seek to obtain that consent before transferring the rights. In fact, the well field lease agreement specifically identifies this issue in paragraph 18 found on page 39 of Attachment MP-3. Mr. Prine also addresses this in his rebuttal testimony. Real estate is a non-issue for Indiana Utility Regulatory Commission ("IURC") purposes.

NOW'S UNDERSTANDING OF CHARLESTOWN SYSTEM

Q. Mr. Isgrigg claims at 2:31-32 of his testimony that if the proposed transaction between Charlestown and Indiana American Water Company ("IAWC") (the "Proposed Transaction") closes that Charlestown customers will see a 150% spike in water bills "with no immediate improvement in water quality." What is your response to that statement?

A. The statement is ambiguous and unsubstantiated. Mr. Isgrigg provided no engineering documentation to support this conclusion. Further, Mr. Isgrigg looks at water bills in a silo and does not take into account the sewer bill offsets that

Mayor Hall has proposed and the property tax monies that will go to sewer infrastructure to help keep the combined sewer and water bill low.

Mr. Isgrigg also misses the many benefits of looping mains. Dead end mains create serious water quality problems. Attachment WAS-1R is a 2005 article titled "Dead-end flushing of a distribution system: Short and long-term effects on water quality" that appeared in the *Journal of Water Supply*. In the very first paragraph of the article, the authors state:

> Distribution system dead-ends are well known problematic locations for water quality. High residence times, absence of residual disinfectants, and favourable corrosion conditions may interact to create an adequate environment for bacterial growth (Carter 1997). The hydraulic conditions (i.e. laminar flow) favour the accumulation of sediments (loose deposits). The latter, if resuspended, may play an important role in water quality degradation by increasing mineral content, but also organic matter, bacterial biomass, and even macroorganisms.

Mr. Isgrigg claims he studied the looping of Charlestown's dead end lines during the 1970's and concluded it would not help (5:6-7). Not only does Mr. Isgrigg rely on 40-year old information, he either ignored or wasn't even aware of the consensus of the engineering community that looping provides water quality benefits. Mainstream engineering firmly believes that dead end mains are "well known problematic locations for water quality."

Contrary to Mr. Isgrigg's testimony, the proposed looping projects offer immediate benefit to the health, safety and welfare of the public. Mr. Isgrigg's narrow focus completely diminishes the hazards associated with high water age and its impacts on the disinfection process, sequestering process and the general

abilities of the chemical treatment process. Furthermore, branched systems with dead end lines are highly susceptible to reduced fire flows because they restrict flow during high demand situations, which reduces the system's capacity.

Q. Next, Mr. Isgrigg claims to be "very familiar" with Charlestown's water system at 3:10 of his testimony. Do you have any comments on that?

A. Yes. Mr. Isgrigg last worked on the Charlestown water system in the 1970s. (see Attachment WAS-2R, which provides relevant data request responses received from NOW pertaining to Mr. Isgrigg's work on the Charlestown water system). Mr. Isgrigg may have been "very familiar" with Charlestown's water system back in the 1970s, but in my opinion, he can no longer claim to be "very familiar" with Charlestown's system. In Attachment WAS-2, Mr. Isgrigg states in response to the request "Please produce any and all reports on the City of Charlestown's water system, or any aspect thereof, … prepared by Mr. Isgrigg for the City of Charlestown," that he has "no files prior to 1980." The data request response to request 1.15 conclusively establishes that Mr. Isgrigg has not performed a study of Charlestown's water system since at least 1979 when he last worked on Charlestown's water system and that he has no records prior to 1980. He has no foundation to claim that he is familiar with Charlestown's water system, let alone claim the answer to Charlestown's water woes can be simply fixed. Perhaps the ambiguous nature of the phrase "very familiar" allows Mr. Isgrigg to believe he has the familiarity that he claims he does.

Q. How has the field of water system engineering changed since the 1970s when Mr. Isgrigg last worked on the Charlestown water system?

A. The advent of water system modeling through computers has enormously helped with system design and understanding the effects of water system configuration and design. The American Water Works Association has published a manual, the AWWA Manual M32, titled *Computer Modeling of Water Distribution Systems*, which discusses the benefits of computer modeling. I have attached the AWWA Manual M32 to my testimony as Attachment WAS-3R. As stated in Section 1.3 of the AWWA Manual M32, computer modeling software was first developed in the 1970s and "experienced exponential growth" in the 1990s. The AWWA Manual M32 goes on to state that software packages allowed integration with GIS platforms in the 2000s. Accordingly, Mr. Isgrigg's knowledge of Charlestown's water system is outdated and superseded by information brought to light by better technology like computer modeling.

Q. In Mr. Parks' testimony on behalf of the OUCC at 26:8-11, he indicates that Saegesser Engineering, Inc., had prepared a water distribution map and hydraulic model of Charlestown's system using GIS technology. Is that the type of modeling software that the AWWA Manual M32 contemplates?

A. Yes. The AWWA Manual M32 discusses the historical expense associated with the labor-intensive process associated with model development that existed prior

to the current methods offered by utilizing GIS technology. AWWA Manual M32 acknowledges that models more effectively organize and present data in ways that are easier to communicate and evaluate. Advances in technology have broadened the uses of distribution system modeling from just an infrastructure planning tool to an integrated system used to improve operations, to analyze water quality, and to plan water system security improvements. Computer models provide a "birds-eye view" of the system's behavior in a dynamic state. Once calibrated, from pressure and flow data collected from within the physical distribution system, one can observe the behavior of the system in its entirety. Multiple scenarios may be developed and presented to the utility owner. This is the process that we used to develop the recommendations in our engineering report that are also discussed in my direct testimony. I would note that Mr. Isgrigg did not make the recommendations set forth in his testimony with the benefit of using the technology we've leveraged for Charlestown.

Q. Mr. Isgrigg goes on to discuss samples he took from the Raney Wells at the Indiana Army Ammunition Plant presumably some time during the 1970s. He draws the conclusion that Charlestown "needed a Raney Well or some other horizontal well screen to gather water." (4:1-2). What is your reaction to that statement?

A. My reaction is simple: Mr. Isgrigg offers no hard proof of this. It is his bald statement and nothing more. He claims to have a cache of documents related to

the Charlestown system but offered nothing in the way of proof to demonstrate that his claims have a basis in fact and perhaps more importantly, as his response to request 1.15 (*See* Attachment WAS-2R) makes clear, he has no reports of his own. He relies completely on the 1970s maps and some documents related to real estate he identifies at 1:30 to 2:1 of his testimony.

Furthermore, Mr. Isgrigg completely misses the source water versus distribution system issue. He assumes with no factual basis and without the benefit of computer modeling that the Charlestown distribution system does not contribute to the brown water problem and that the brown water problem is a source water issue.

Q. What about his statement that current technology with horizontal drilling would make drilling a new Raney Well "relatively easy" (4:3-4)?

A. Mr. Isgrigg's statement is highly conclusory. He does not define what "relatively easy" means. He does not identify a cost associated with horizontal drilling. He provides no evidence of any sort to support his conclusion. It is difficult to evaluate his assertions when he doesn't provide documentation.

Q. Mr. Isgrigg claims your recommendations misdiagnose the problems with Charlestown's water. (4:19-20). Please respond.

A. Again, Mr. Isgrigg fails to provide any support for his statement. Without supporting documentation, Mr. Isgrigg's statements appear to simply be

conjecture derived from decades-old recollections, which again, appear to be fixated primarily on source water quality. Water distribution and treatment are interrelated processes and must be considered holistically.

The holistic approach must be considered given that both distribution and treatment are regulated with specific water quality standards as prescribed by the Indiana Administrative Code 327 Article 8. As an analogy, the distribution system may be thought of as a chemical reactor. The chemical treatment process that begins at the treatment plant continues through the distribution system cycle until it is consumed by the end-user. The chemicals used to treat the raw source water has a finite life expectancy that varies based on empirical characteristics of the source water, the distribution system's age, pipe materials, and time spent in the distribution system. Given these considerations, the distribution system is a significant factor with respect to water quality. With that said, the two are symbiotic components and each directly impacts the water that consumer receives from the tap.

Q. Please respond to Mr. Isgrigg's claims about water hardness (4:23-5:16)?

A. Initially, I would note that Mr. Isgrigg provides no supporting evidence for his position. Water hardness, in and of itself is not a health hazard. According to the United States EPA, there are approximately 151,000 public water systems in the United States. (*See* https://www.epa.gov/dwreginfo/information-about-public-water-systems - last checked November 20, 2017). According to data published

by the American Water Works Association only about 1,000 public water systems remove hardness. *See* Water Treatment Plant Design, AWWA, 5th Ed., Chapter 13. During our time working with Charlestown, we are not aware of any common complaints associated with high hardness. Again, Mr. Isgrigg's fixation on hardness is misplaced and appears to result from his work in the 1970s pertaining to source water.

Q. What about Mr. Isgrigg's claim of 1,600 pounds of sludge being pumped into Charlestown's distribution system every day at 5:14-15? Is that a concern?

A. No, not on the scale Mr. Isgrigg claims. Even assuming Mr. Isgrigg's allegation is correct and 1,600 pounds of "sludge" from hardness are being pumped into the distribution system every day, over a 50 year period, this would equate to over three (3) times the volume in "sludge" compared to the volume of the current distribution system. In other words, Charlestown's distribution system would be completely clogged. In Attachment WAS-4R, I provide my calculations for the sludge volumes that Mr. Isgrigg alleges enter the Charlestown distribution system and how that compares to the volume of Charlestown's distribution system. To me, Mr. Isgrigg's claims about 1,600 pounds of sludge entering Charlestown's distribution system on a daily basis underscore that his testimony is completely without a foundation in fact.

Again, if this situation was as paramount a problem when Mr. Isgrigg served as engineer/environmental consultant to Charlestown, why did Mr. Isgrigg allow this to continue? He contributed to the problems Charlestown faces today.

Q. Mr. Isgrigg is critical of the looping project you identify. (5:5-10). Is Mr. Isgrigg correct in his criticisms?

A. No. As I previously identified, looping provides tremendous benefits. Mr. Isgrigg's criticism is rooted in an outdated, 1970s view of branch system hydraulics. Perhaps this should not be surprising since Mr. Isgrigg has not designed a water distribution system, water treatment plant or water storage facility since at least January 1, 2007. (*See* Attachment WAS-5R, which is NOW's data request response to Charlestown's requests Q1.3 to 1.5).

Q. What about Mr. Isgrigg's attacks on Shane Spicer of Saegesser Engineering, Inc. (5:19-6:10)? Do you have a response to Mr. Isgrigg?

A. First off, Mr. Isgrigg attaches Mr. Spicer's resume in the data request response. (NOW Attachment RI-2, pages 3-7). That resume is impressive, including being admitted to several engineering honor societies and achieving Dean's Scholar List and Dean's List recognition. Mr. Isgrigg's attack on Mr. Spicer and Saegesser Engineering, Inc., is wholly unwarranted and flies in the face of the considerable experience Mr. Spicer and Saegesser Engineering, Inc., brings to solving Charlestown's water problems.

Mr. Spicer holds a Bachelor of Science in Civil Engineering (2006) and a Master of Engineering (2008) from the University of Louisville, Speed School of Engineering. Ironically, that is the same school from which Mr. Isgrigg claims to hold a degree. Mr. Spicer's Master of Engineering degree is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. Mr. Spicer has been employed by Saegesser Engineering, Inc., for approximately 19 years and has spent years providing engineering services for Charlestown and similar communities, which are identified on Mr. Spicer's resume (NOW Attachment RI-2, page 4-7). Mr. Spicer has been responsible for the testing, analysis, compliance reporting and design and operation of water treatment and distribution facilities to meet current regulations and this experience is reflected on the list of projects on which he has worked, including substantial work for the following water utilities and water projects: Scottsburg, Salem, Crothersville, Clark County Commissioners, and of course Charlestown. All of this is right there in Mr. Spicer's resume. Mr. Isgrigg nevertheless makes a brazen statement that Mr. Spicer has "almost no prior experience with engineering for a water utility" (5:21-22) without checking his facts and in direct contravention of the information he was provided in discovery. I find Mr. Isgrigg's statements highly unprofessional, especially in light of his having no experience in the past 10 years designing water treatment plants, water distribution systems or water storage facilities. (*See* Attachment WAS-5R).

MR. ISGRIGG'S "CHEAPER ALTERNATIVES"

Q. Mr. Isgrigg claims there are "at least four viable alternatives" to the plan that Saegesser Engineering, Inc., proposed. (6:34). What is your response?

A. Mr. Isgrigg's alternatives do not address the needs of the distribution system. Again, Mr. Isgrigg fixates on source water quality issues that do not pose a risk to the public's health. Fixing the distribution system is the highest priority because that directly impacts the public health, which is one of the key tenets of holding a professional engineer's license. Certainly, a filtration plant or alternative source of supply might make sense in the future, but the most impactful dollars need to be spent on the distribution system.

Q. Mr. Isgrigg notes that you reported to the Charlestown City Council in 2008 that a Raney Well would cost approximately $600,000 (7:33-36). Why did Charlestown not proceed with the Raney Well project?

A. First off, Mr. Isgrigg's assertion misrepresents the minutes of the Charlestown City Council. I did not state that my estimate for the Raney Well was $600,000. I reported that it was the DNR's estimate. This is yet another instance where Mr. Isgrigg fails to pay close enough attention to the details he relays.

The minutes actually state as follows: "... IDNR COST ESTIMATE FOR THE PLAN IS $600,000.00 THE VERTICAL WELLS ARE ESTIMATED AT $150,000.00 EACH AND ANOTHER $300,000.00 TO RUN NEW WATER LINES FROM THE AQUIFER TO THIS END OF THE PLANT. BILL SAID

THIS IS ONE OPTION HE RECOMMENDS TO BE CONSIDERED". As reflected in the Charlestown City Council's minutes, these estimates were those of the DNR, not me or Saegesser Engineering, Inc.

Moreover and contrary to Mr. Isgrigg's insinuation, those costs did not reflect the total cost of any project to fix Charlestown's water quality problems. Costs such as transmission lines, land acquisition, and other costs would have been needed to bring that project to fruition. As recommended by me, Charlestown considered the DNR option but ultimately opted to pursue other measures to combat its brown water problems.

I would also note that Mr. Isgrigg brings up an important point, however, in that the Charlestown City Council was involved. The solutions to Charlestown's water problems are not solely for the mayor of Charlestown. The Charlestown City Council needed to be involved to approve rates and to approve the issuance of bonds. This notion that NOW has that the Mayor can make decisions in a vacuum is simply wrong.

Q. Did Charlestown consider the filtration plant project Mr. Isgrigg identifies (8:5-6)?

A. Yes, Charlestown considered that project. It's my recollection that the filtration plant project was not pursued because it was not included in rates and rates would have needed to increase, as well as the initial cost projections presented to the

Charlestown City Council did not include ongoing operation and maintenance costs, which made the project even more expensive than anticipated.

Q. Why won't the "basic changes to operations and maintenance procedures" (7:1-2) fix Charlestown's water quality problems?

A. Mr. Isgrigg's broad use of words make it difficult to single out the meaning of "basic changes". First off, Mr. Isgrigg claims that the polyphosphate injection point is too close in proximity to the Chlorine. (7:2-10). From reading his testimony, one gets the impression this can be done easily. Charlestown is required by its permit to inject the chlorine at its current location to provide sufficient contact time to meet disinfection regulation. The engineering report I attached to my direct testimony as Attachment WAS-1 specifically addresses the issue of chlorine and polyphosphate injection on pages 15 and 16. The improvements proposed in the report will allow the chemical processes to be spread out to allow for the type of treatment process Mr. Isgrigg identifies. Given Mr. Isgrigg's criticisms of the report on this matter, it is apparent either he didn't read or he didn't understand the context.

Second, Mr. Isgrigg's testimony assumes the water problem he discusses is associated with the source water. Again, source water filtration and treatment may certainly present a worthy project in the future, but the best, most effective dollars spent in the Charlestown system will be cleaning up the distribution system.

Third, Mr. Isgrigg claims the sediments in Charlestown's distribution system "can be quickly washed out with a simple hydrant flush." (7:13). If the sediments that have built up in Charlestown's distribution system since its inception could be "quickly washed out with a simple hydrant flush", Charlestown's existing flushing program would have already washed out the sediments. If Mr. Isgrigg had paid attention to Charlestown's discovery responses to OUCC Data Request Set No. 5, specifically, request 5.6, he would have learned that Charlestown engages in a system-wide flushing program that encompassed 12 days per year in 2014 and 2015 and 6 days during 2016 (*see* Attachment WAS-6R, Charlestown's response to OUCC Data Request Set No. 5, Q5.6). This is yet another instance where Mr. Isgrigg offers opinions that are not based in fact.

At this juncture it must be asked: if there is or was a simple fix to Charlestown's water problems, then why didn't Mr. Isgrigg implement it 40 years ago at the time that he was Charlestown's city engineer/environmental consultant?

Q. Why isn't the DNR's water treatment plant a viable solution as Mr. Isgrigg claims?

A. Charlestown discussed the possibility of Charlestown providing water to the River Ridge Development Authority with the DNR. The possibility of DNR providing water to Charlestown was also considered. My recollection is that an efficient, reliable and cost-effective solution was not possible. While DNR might have had 4 mgd of well capacity, it built a 2 mgd treatment plant. With Charlestown's peak

usage at approximately 1.2 mgd and with DNR's most recent monthly report of operations demonstrating an October demand of over 800,000 gpd, the DNR simply does not have sufficient capacity. I have attached as Attachment WAS-7R (the most recent consumer confidence report of the DNR plant) and Attachment WAS-8R (DNR's October 2017 Monthly Report of Operation) to demonstrate the DNR's treatment capacity.

CONCLUSION

Q. Please summarize your rebuttal testimony.

A. Certainly. Mr. Isgrigg produces not one shred of engineering evidence to support his conclusions. He relies on information from the 1970s to draw conclusions concerning how Charlestown's water utility should make engineering decisions today. NOW has offered no credible evidence to demonstrate that the Proposed Transaction would not be in the public interest. Charlestown has suffered long enough with water problems. It is time to let an entity whose sole business is water take over the system and finally deliver the clean, safe drinking water that the people of Charlestown deserve.

Q. Does this conclude your rebuttal testimony at this time?

A. Yes, it does.

Verification

I hereby verify under the penalties for perjury that the foregoing representations are true to the best of my knowledge, information and belief.

Signature: William A. Saegesser Dated: 11-20-17

William A. Saegesser

Attachment WAS-1R

Dead-end flushing of a distribution system: Short and long-term effects on water quality

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Dead-end flushing of a distribution system: Short and long-term effects on water quality

Benoit Barbeau, Vincent Gauthier, Karine Julienne and Annie Carriere

ABSTRACT

The effectiveness of routine spot flushing in two dead-end locations of the Montreal distribution system (DS) was assessed. The two 203 mm (8 in) pipes were roughly 500 m long. Two successive annual spot flushings, 25 minutes each, were performed and the impact on water quality was assessed during the first 24 hours, 2 weeks later, and the following year. The flushing water was also analysed in order to evaluate the quantity and nature of loose deposits that were drained. High numbers of atypical coliforms were removed during the first annual flushing procedure. No atypical coliforms were recovered from the flushing water during the second annual procedure, suggesting that the first procedure was effective in eliminating these organisms. During the first 24 h after flushing, chlorine decreased rapidly at both dead-end locations while heterotrophic plate counts (HPC) counts increased during the same period. Therefore, only minor improvements in water quality (mainly turbidity and total iron) were measured during the two weeks after the flushing procedure. With respect to spot flushing dead-end locations on a routine basis, the principal benefits observed in this specific DS were related to short-term improvements in the aesthetic characteristics of the distributed water.

Key words | dead-ends, distribution system, drinking water, loose deposits, unidirectional flushing

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INTRODUCTION

Distribution system dead-ends are well known problematic locations for water quality. High residence times, absence of residual disinfectants, and favourable corrosion conditions may interact to create an adequate environment for bacterial regrowth (Carter 1997). The hydraulic conditions (i.e. laminar flow) favour the accumulation of sediments (loose deposits). The latter, if resuspended, may play an important role in water quality degradation by increasing mineral content, but also organic matter, bacterial biomass, and even macroorganisms (LeChevallier *et al.* 1987; Van Lieverloo *et al.* 1997; Gauthier *et al.* 1999; Zacheus *et al.* 2001). The biological activity in loose deposits may create anaerobic conditions favourable to taste and odour problems and even enhance corrosion by creating regions with different oxygen, pH and iron concentrations (Snoeyink & Wagner 1996). The high disinfectant demand of these loose deposits (Gauthier *et al.* 1999) makes it difficult to control the biological activity by using disinfectants.

The use of unidirectional flushing (UDF) has often been proposed as good management practice for controlling biofilms and sediment accumulation (Chadderton *et al.* 1992; Rodgers *et al.* 1998; Friedman *et al.* 1998; Antoun *et al.* 1999). However, unidirectional flushing involves various costs, such as the labour and water used during the procedure. Time must also be allocated to manage the procedure and compile the data acquired during flushing. Finally, in some regions, appropriate measures must be taken in order to limit the environmental impact of chlorinated/chloraminated water released during flushing events. Due to these constraints, many utilities rely solely on spot flushing

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(opening one fire hydrant at a time without closing valves in order to canalize the flow in one direction) to address problems located in certain portions of their system.

Considering the wide differences in distribution system environments, only a limited number of studies have investigated the nature of loose deposits, their quantity and associated bacterial activity (LeChevallier *et al.* 1987; Emde *et al.* 1995; Antoun *et al.* 1999; Gauthier *et al.*, 1999; Rompré *et al.* 2000; Zacheus *et al.* 2001; Carrière *et al.* 2002). Such information is essential in order to assess the potential impacts of flushing on water quality in the short term (just after the hydrants are closed and the distribution system (DS) is put back in service) and in the long term (weeks or months after the procedure). Even if the flushing is performed according to standards, the short-term disturbances caused by the flushing could indeed be the cause of adverse water quality during the 24 hours following the procedure.

OBJECTIVES

The general objective of this study was to document the benefits of periodically spot flushing dead-end locations in a distribution system. More specifically, its aims were to:

(1) Evaluate the short-term variations (24 h, 7 days) and long-term impacts (1 yr) on water quality of a periodical dead-end flushing.
(2) Characterize the loose deposits, and the associated biomass, accumulated in these dead-end locations.
(3) Assess whether or not spot flushing dead-end locations was an efficient procedure in improving water quality in these problem areas.
(4) Compare the loose deposit characteristics recovered for two successive annual flushings.

MATERIALS AND METHODS

General water characteristics in the distribution system

The City of Montreal (Canada) is supplied by the Atwater (250 MGD) and the DesBaillets (300 MGD) Water Treatment Plants. Both plants use filtration without coagulation, and post-chlorination. DesBaillets also injects ozone before the final chlorine disinfection. The Montreal distribution system is divided into six pressure zones. This partitioning is done by closing valves on the distribution system, therefore creating dead-end conditions on each side of the valve. The total number of dead-ends is estimated to be over a thousand.

The water quality in this distribution system is not cause for serious concerns (Desjardins *et al.* 1997). The microbiological quality is very good with less than 0.5% of samples positive for total coliforms and 57% of heterotrophic plate counts (HPC) samples showing less than 1 CFU ml^{-1}. The distributed water is well mineralized (alkalinity = 90 mg $CaCO_3$ l^{-1}, pH 7.8, total hardness 126 mg $CaCO_3$ l^{-1}) and not very aggressive (aggressivity index = 11.9), which prevents the corrosion of iron, since ductile iron pipes make up the vast majority of the DS. Consequently, complaints about red water events are scarce and water quality degradations are mostly localized in dead-end locations.

Description of the study site

Two adjacent sampling sites were chosen on parallel streets in the pressure zone no. 4 of the Montreal DS (Figure 1). The first site (CLDI) is located on a cement-lined ductile iron pipe laid in 1978, while the second (GCI) is located on a grey cast iron pipe laid in the early 1920s (Table 1). During the winter, chlorine residuals at the entry of the sector vary from approximately 0.2 to 0.5 mg Cl_2 l^{-1}. During the summer, chlorine is supplemented at the high-pressure pump discharge (located at the outlet of the storage tank) using hypochlorites in order to maintain a target level of 0.6–0.9 mg Cl_2 l^{-1} at the storage tank outlet. A mean residence time of 7 to 10 hours was calculated between the outlet of the tank and the inlet of the dead-end locations according to hydraulic modelling.

Experimental design

Water quality was sampled on a weekly basis over a 3-month period (summer of year 1) at the outlet of the tank (sector entry) and at sampling ports installed directly

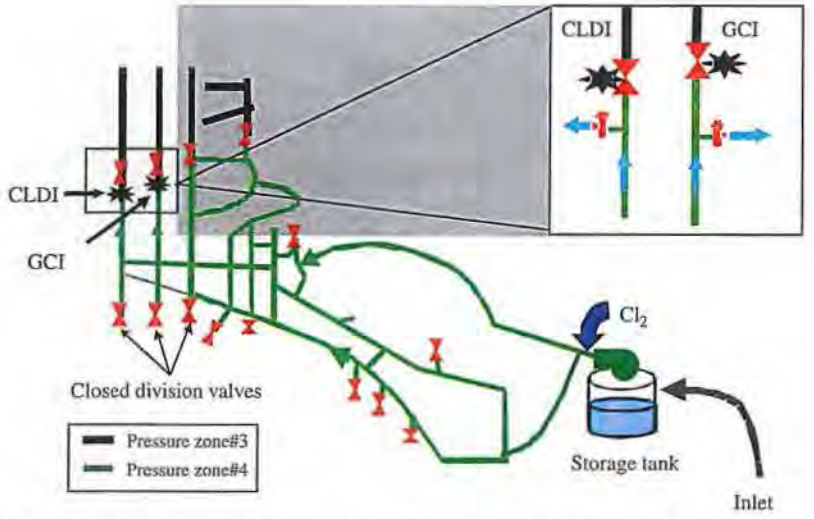

Figure 1 | Location of study site and sampling location (CLI: cement-line ductile iron, GCI: grey-cast iron).

on the pipes at both dead-end locations (sites CLDI and GCI). Table 2 summarizes the analytical methods employed.

At the end of the summer, both dead-ends were flushed one week apart using the fire hydrants located within a range of 10 m (30 ft) of the pipe's dead-end. Prior to the flushing procedure, the water quality in the dead-end was sampled. The 203 mm (8 in) mains were flushed for a total duration of 25 min at a velocity of $1.8 +/- 0.2$ m s^{-1} (6 ft s^{-1}).

Samples were collected at the fire hydrant outlets at fixed intervals during the procedure (t = 1, 4, 7, 10, 15 and 20 minutes) using a sampling tap, as described in Figure 2. These samples were tested for water quality parameters described in Table 2.

Taking repeated samples at the dead-end locations after 3 h, 6 h, 9 h and 24 h helped to assess short-term water quality variations after flushing. Long-term impacts were evaluated by comparing the summer water quality data of year 1 with the data set collected during the summer of year 2.

Finally, both sampling sites were then flushed a second time at the end of year 2. This additional procedure allows a direct comparison to be made between the loose deposits recovered from two consecutive annual flushing procedures.

Table 1 | Dead-end characteristics

Characteristics	CLDI	GCI
Pipe materials	Cement-lined ductile iron	Unlined grey cast iron
Length	470 m (1,542 ft)	535 m (1,755 ft)
Diameter	202 mm (8 in)	202 mm (8 in)
Age	1978	1920–1930

Analytical methods

Table 2 provides the references for the analytical methods used during the course of this study. Chlorine residuals were measured using the standard DPD method (*Standard Methods* 1995 4500F). Total iron was measured using the phenantroline colorimetric method. Turbidity was measured using a ratio turbidimeter (Hach, model 2100A). Results are expressed as nephelometric turbidity units (NTU).

Heterotrophic plate counts were measured on R2A agar following incubation at 20 °C during a 7-day period. Results are expressed as CFU ml^{-1}. Total coliforms were analysed on m-Endo media after 24 h at 35 °C. Atypical coliforms (background colonies not exhibiting a green metallic sheen after 24 h at 35 °C) were also recorded. Results are expressed as CFU 100 ml^{-1}. The direct total bacterial counts were determined by epifluorescence microscopy after acridine orange staining, following the Hobbie *et al.* (1977) procedure. Enumerations are based on estimates

Table 2 | Description of analytical methods

Parameters	References	Comments
Turbidity (NTU)	APHA, 2130B	Hach (model 2100A)
Total iron (mg Fe l^{-1})	APHA, 3500D	Phenantroline method
pH	APHA, 4500-H +, B	FisherMeter-119
Suspended solids – TSS (mg l^{-1})	APHA, 2540 D	
Volatile suspended solids – VSS (mg l^{-1})	APHA, 2540 E	
Mineral characterization	APHA, 3500	Atomic absorption spectrometric method
Free chlorine (mg Cl_2 l^{-1})	APHA, 4500-Cl, F	DPD ferrous titrimetric method
Heterotrophic plate counts – HPC (CFU ml^{-1})	APHA, 9215 D	R2A, 7 days at 20 °C
Total direct counts -TDC (log of bacterial counts ml^{-1})	APHA, 9216 B	0.22 μm filters stained with acridine orange (0.01%) during 2 min, observation at 1000X
Total coliforms (CFU 100 ml^{-1})	APHA, 9222 B	M-Endo media, membrane filtration

from 10 microscopic fields per slide. We consider this method to be semi-quantitative due to the interference of particles that are present in flushing waters. It was possible to observe some of these particles being colonized by an abundant biomass without being able to precisely count each bacterium.

Total suspended solids (TSS) were measured on flushing waters using precombusted fibreglass filters (Watman, 934-AH, ∅ 47 mm) and were calculated based on filter mass differences after 103 °C drying and the measured volume of filtered water (2 to 5 l). The mass difference between the burnt filters (505 °C) and the dried filters (103 °C) was used to calculate the volatile solids fraction (in order to estimate organic matter content). Mineral analysis was performed by mineralizing filters (cellulose acetate, MF5 type) in a Teflon pot containing 1 ml HCl, 0.5 ml HNO_3 and 0.5 ml HF. The concentrate was then diluted and analysed for Al, Ca, Na, K, Fe, Mn, Zn, Cu and Pb by flame atomic absorption spectrometry. Results are expressed as μg l^{-1} or as percentages of the TSS.

Figure 2 | Sampling device installed on the fire hydrants.

RESULTS

Water quality prior to flushing procedure

Water samples were collected at the tank outlet (after rechlorination) and also at the CLDI and GCI sites during a 3-month period before the beginning of the first annual flushing procedure. Figure 3 represents the average water quality measured during this period. The general water quality at both sites was similar and typical of dead-end locations: absence of residual chlorine, increased turbidity, and elevated culturable bacteria (HPC). The total iron concentrations in

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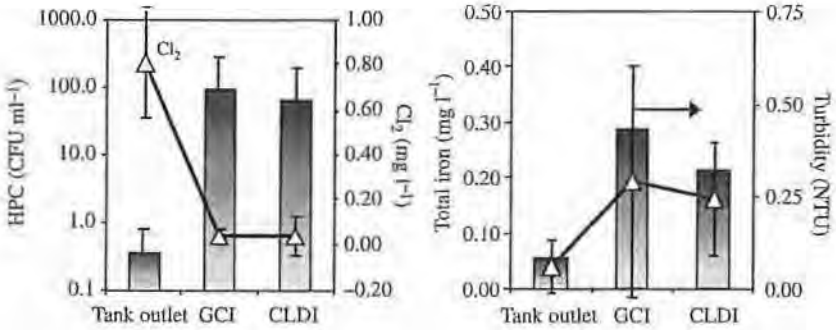

Figure 3 | Average year 1 summer water quality conditions (N = 6–8) at tank outlet and at both dead-end locations prior to flushing procedure.

dead-end water samples (0.2–0.3 mg l^{-1}) also indicated corrosion and probably explain the increased turbidity. However, no coliforms (<0.25 CFU 100 ml^{-1}) were detected during the weekly sampling campaigns ($n = 6–8$).

Water quality during flushing procedure

Water samples were collected in increasing intervals in order to characterize the initial peak of loose deposits and, ultimately, to estimate the time required to flush out all deposits. Figure 4 represents the total iron profile, total suspended solids (TSS) and total direct bacterial counts (TC) eliminated from both sites during the two consecutive annual flushing procedures.

During each flushing procedure, TSS peaked sharply during the first 5 minutes, then decreased steadily during the next 15 minutes, and finally reached a plateau of around 1–2 mg l^{-1}. The peak TSS recorded during each flushing varied from 6.9 to 12.3 mg l^{-1}, which are very low values compared with our personal experience with other distribution systems (TSS > 200 mg l^{-1}, typically).

Total iron concentrations generally took longer to decrease and flushing for at least 15 minutes was necessary

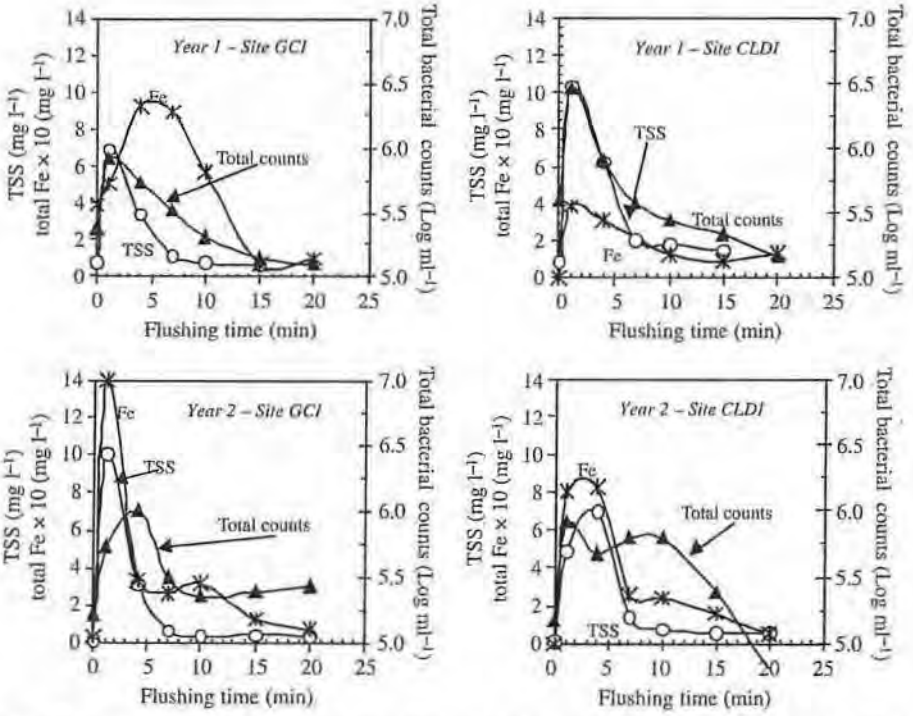

Figure 4 | Total suspended solids (TSS), total bacterial counts (total counts) and total iron measured during 20-min flushing procedures at the CLDI and GCI sites. Top: Year 1 procedure. Bottom: Year 2 procedure.

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to reduce total iron concentrations to less than 0.10 mg l^{-1} (Figure 4). Significant differences were observed between the two sampling sites; the GCI site exhibited higher iron concentrations for a longer duration compared with the CLDI site. Such observation confirms routine monitoring data, which had showed higher average (Figure 3) and maximum (data not shown) iron concentrations at the grey cast iron sampling location.

A comparison of total iron analysis with suspended solids data (Figure 5a) indicates that these two parameters, although significantly correlated, were not as closely associated as would have been expected if deposits were essentially composed of corrosion by-products. For example, in year 1, a much higher linear density of iron (in g Fe m^{-1}) was removed during flushing at the GCI site compared with the CLDI site (0.069 g m^{-1} vs. 0.019 g m^{-1}, respectively), yet this finding did not translate into higher suspended solids (0.26 vs. 0.40 g m^{-1}, respectively). In Year 2, the linear iron density was equal at both locations (0.044 and 0.046 g m^{-1}, respectively), even though TSS was still twice as high at the CLDI site than at the GCI site (Table 3).

Analyses of the flushing water were used to obtain information on loose deposits. The characteristics of the drained deposits are explained in the following sections.

Quantity of loose deposits

By performing a numerical integration of the TSS concentration vs. time curve (Figure 4), it is possible to calculate the total amount of loose deposits drained during the first 20 minutes of the flushing procedure (using the actual flowrates measured on site) (Table 3). Considering experimental error (+/− 10%), we calculated that, for a given site, an identical mass of loose deposits was removed during year 1 and year 2. A total mass of 122 g and 221 g were removed at the GCI and CLDI sites respectively during the first annual campaign (year 1), while 121 g and 202 g were removed during the second one (year 2). Such values are equivalent to a loose deposit linear accumulation of approximately 0.26 g m^{-1} and 0.40 g m^{-1} for the GCI and CLDI sites, respectively.

Loose deposit composition

The mineral and organic characteristics of loose deposits were evaluated during each annual flushing procedure. Results, presented in Table 4, indicate that the TSS collected were mainly made of (i) iron (27–71%), (ii) a relatively high, but constant, abundance of volatile suspended solids (19–22%), (iii) calcium (2.8–3.1%), (iv) manganese (0.35–6.2%), and (v) other marginal components (Pb, Cu, etc.). Moreover, a relatively high percentage of unknown material (5.7–45%) was observed. For both years, the CLDI site had a particularly higher amount of unknown material than the GCI site. This unknown amount would most likely be composed of silica and aluminium, two components not analysed during this research, but that can be found in cement or sand, silt and clay particles detected in Montreal treated water suspended solids (Gauthier *et al.* 2001). A follow-up study in the area indicated that 1.7 to 6.4% of TSS was composed of aluminium while silicates accounted for 5 to 24% of the mass of deposits (Carrière 2002). It is also suggested that the amount of iron measured at the CLDI site in year 1 (27%) might have been underestimated, as it is quite low compared with the typical iron values in this zone (53–71%). Finally, it is noteworthy that the TSS level of manganese was greatly reduced during

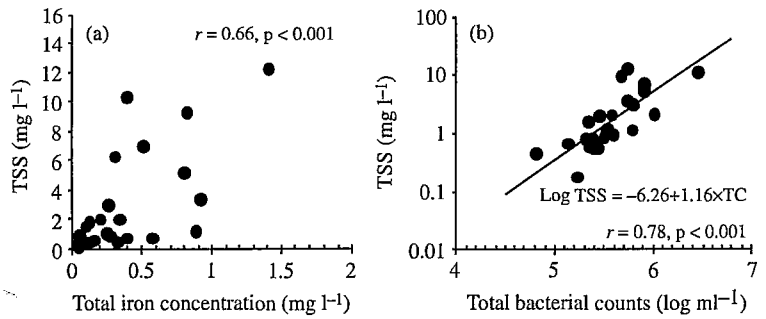

Figure 5 | Correlation between total suspended solids and iron concentration (Figure 5a) or total bacterial counts (Figure 5b), as measured on samples collected during flushing procedures (Year 1 and Year 2).

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Table 3 | Comparison of contaminants drained for two consecutive annual flushings

	Grey cast iron			Cement-lined ductile iron		
Parameters	**Year 1**	**Year 2**	**Variation**	**Year 1**	**Year 2**	**Variation**
Microbiological						
Total bacterial counts (bacteria m^{-3})*	3.0×10^5	3.8×10^5	+0.1 log	5.2×10^5	4.1×10^5	−0.1 log
Atypical coliforms (CFU 100 ml^{-1})*	211	<0.12	>-3.2 log	425	2.4	−2.2 log
Physico-chemical						
Total iron (g m^{-1})	0.069	0.044		0.019	0.046	
TSS (g m^{-1})	0.26	0.26		0.38	0.41	
Total mass (g)	122	121	1%	221.	202	9%

*Total numbers of organisms divided by the total volume of flushed waters

the second annual flushing. Loose deposits were, on average, made of 5.9% manganese in year 1. This value declined to 0.41% during the second annual flushing and stayed quite low at an average of 0.35%, which was measured at these sites in 2000 and 2001 (Carrière 2002).

Microbiological content of loose deposits

Microscopic observations confirmed that bacteria heavily colonized flushed deposits. Except for a few particles that were too densely colonized, it was generally possible to adequately enumerate bacteria in the samples (Table 3).

Table 4 | Loose deposit composition drained during flushing

	GCI		CLDI	
	Year 1	**Year 2**	**Year 1**	**Year 2**
Iron (as FeOOH)	53%	71%	27%*	55%
Volatile suspended solids	21%	22%	19%	21%
Calcium (as $CaCO_3$)	2.8%	NA	3.1%	NA
Manganese (as MnO_2)	6.2%	0.35%	5.6%	0.46%
Lead (as Pb)	0.14%	0.86%	0.13%	0.15%
Copper (as Cu)	0.13%	0.08%	0.09%	0.11%
Unknown (including Si and Al compounds)	17%	5.7%	45%*	24%
Total	100%	100%	100%	100%

NA: not available, *suspect results

Total bacterial counts during flushing were significantly ($p < 0.01$) correlated with log-transformed values of turbidities ($r = 0.69$), total suspend solids ($r = 0.78$) and total iron concentrations ($r = 0.55$). Figure 5b displays the relationship between TSS and total bacterial counts, which was the most significant observed. The measured bacterial colonizations were around $1.5-1.9 \times 10^{11}$ bacteria g^{-1} of suspended solids for both sampling sites. When subtracting the number of bacteria naturally present in the bulk phase (approx. 1.3×10^5 bacteria ml^{-1}), the bacterial colonization attributed to deposits is reduced by approximately 0.5 log to values of around $1.0-1.4 \times 10^{11}$ bacteria g^{-1}. The number of bacteria in deposits was similar from one year to the next. Therefore, no significant effect was attributed to flushing in regard to reducing the total number of bacteria in deposits.

No attempt was made to correlate HPC with other water quality parameters. The HPC profiles during flushing were very different from the total bacterial counts (data not shown). No HPC bacterial peaks were observed during the flushing. The presence of large particles in the sample can account, in part, for such findings. These particles were colonized by an abundant biomass, as evidenced by microscopic counts. HPC analysis underestimates bacterial density by counting a bacterial aggregate as a single colony. Moreover, the flushing procedure increased the free chlorine concentration up to 0.60 mg Cl_2 l^{-1} by allowing fresh water into the sector. As for many other cultivation methods, free chlorine interferes with HPC measurements by decreasing culturability.

Finally, no total coliforms were detected during any of the four flushing procedures (<1 CFU 100 ml^{-1}). However, 75% of the samples ($n = 12$) were too numerous to count (>250 CFU 100 ml^{-1}) for atypical coliforms during the first annual procedure. The large number of colonies may have interfered with the detection of total coliforms. By contrast, atypical coliforms were almost completely absent during the second annual flushing campaign for both sites. Only three samples out of 12 were exhibiting atypical coliforms, and even so, only at low densities (1–22 CFU 100 ml^{-1}). Thus, flushing apparently had a positive effect on reducing the presence of atypical coliform in deposits.

Short-term (24 h) and mid-term (14 days) water quality evolution after flushing procedure

Figure 6 represents the short-term (24 h) water quality variations measured at both sites following the flushing procedure. HPC bacteria (Figure 6a) were low during the first 8 hours after flushing. However, one day later, the concentrations had returned to typical pre-flushing values. Interestingly, this increase was inversely related to the free chlorine residual concentration in both dead-ends (Figure 6b), which disappeared rapidly. The GCI site exhibited a lower final chlorine residual after 24 h (0.05 mg l^{-1}). Turbidity at the CLDI site slowly decreased during the first 24 h as opposed to the GCI site where it remained fairly stable (Figure 6c).

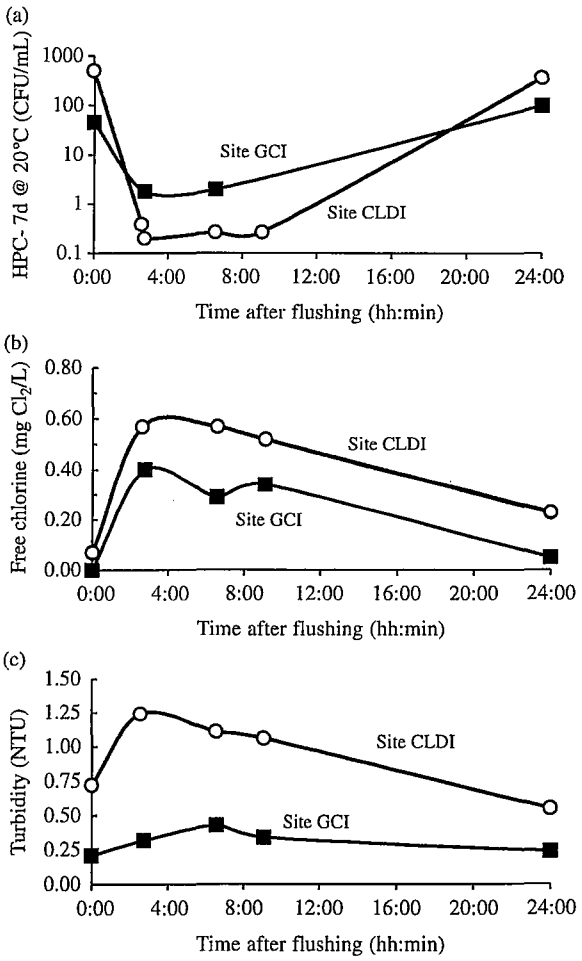

Figure 6 | Short-term (24 h) water quality variations after flushing for 20 min: dead-end sites A and B. (a) Heterotrophic plate counts, (b) free chlorine residual and (c) turbidity (time 0:00 represents the conditions prior to flushing).

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Water quality was also monitored at both dead-end locations for two weeks following the flushing and compared with the data acquired during the three weeks preceding the flushing procedure. Figure 7 shows the impact of flushing on turbidity, HPC bacteria, total iron concentrations, and free chlorine residuals. Turbidities (Figure 7a) were generally lower and more stable following the flushing procedure. For one of the four assays (year 1 at the CLDI site), turbidity decreased slowly over the next two weeks to finally reach the 0.1–0.3 NTU range observed for the other assays. With regard to HPC bacteria (Figure 7b), the flushing did not produce a measurable impact. HPC levels remained relatively high (100–1,000 CFU ml^{-1}) during the following two weeks, while coliforms remained undetected in 400 ml samples (data not shown). As with free chlorine (Figure 7c), a significant impact was only observed for the cement line ductile iron site. For this site, the flushing procedure helped to increase the free chlorine residual up to approximately 0.2 mg l^{-1} while it remained at undetectable levels at the GCI pipe location. Finally, the flushing procedure was beneficial for the reduction of total iron levels, which always remained below 0.15 mg l^{-1} at both locations during the following two weeks.

Long-term impacts of the flushing procedure on water quality

By comparing the weekly monitoring data prior to flushing for the two consecutive annual summers, it was possible to assess the long-term impacts of the procedure on water quality. This approach assumed that the dead-end water quality measured during the summer of year 2 was causally linked with the flushing procedure of year 1. Obviously, several confounding factors may interfere with this analysis. For one, the impact of seasonal water quality variations is difficult to ascertain. For example, water temperatures were approximately 0.7 to 1.0 °C higher in year 2 compared with year 1. Routine distribution system operations (pipe repairs, valve maintenance, fire) also represent potential confounding events that may have been accidentally monitored during our weekly sampling. Keeping these limits in mind, we compared in Table 5 the average microbiological water quality before (summer of year 1) and after (summer of year 2) the first flushing procedure. Comparisons were based on geometrical means (microbiological) or arithmetic means (physico-chemical) calculated using pre-flushing summer data ($n = 4–6$).

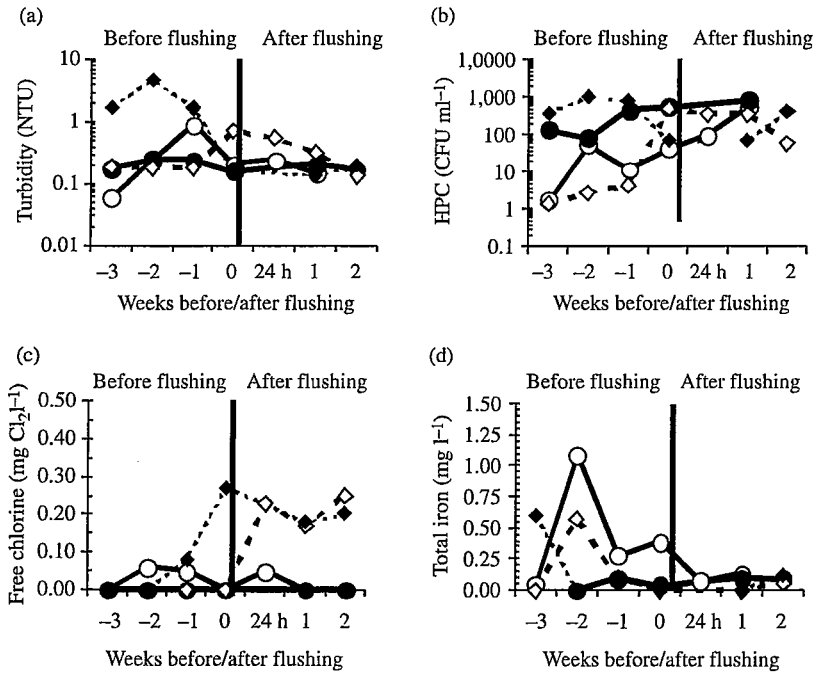

Figure 7 | Mid-term (two weeks) water quality variations after flushing for dead-end sites A and B. (a) Turbidity, (b) heterotrophic plate counts, (c) free chlorine, (d) total iron. GCI: Year 1 = ○, Year 2 = ●, CLDI: Year 1 = ◇, Year 2 = ◆(time 0:00 represents the conditions just before flushing).

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Table 5 | Average weekly water quality at both sites two months prior to flushing procedures (performed at the end of the summer of each year)

	GCI		CLDI	
Parameters	**Year 1**	**Year 2**	**Year 1**	**Year 2**
Microbiological				
Total counts (log ml^{-1})	4.81	5.33	5.42	5.44
Atypical coliforms (CFU $100\,ml^{-1}$)	10 (0.25–200)	<0.13	6 (0.75–137)	<0.13
HPC (CFU ml^{-1})	15 (1.8–560)	235 (35–840)	10 (0.8–373)	383 (71–1,020)
Physico-chemical				
Temperature (°C)	21.4 (19.5–22.5)	22.4 (21–24)	20.5 (19–21.5)	21.2 (20–22)
Total organic carbon (mg l^{-1})	1.98	1.75	2.12	1.71
Turbidity (NTU)	0.16 (0.06–0.21)	0.19 (0.15–0.25)	0.18 (0.18–0.19)	2.7 (1.7–4.6)
Total iron (mg l^{-1})	0.29	0.10	0.19	0.23
Free chlorine (mg l^{-1})	0.03 (0.00–0.06)	0.00 (0.00–0.00)	0.07 (0.00–0.19)	0.03 (0.00–0.20)

From a water utility perspective, the most interesting result was the dramatic reduction in the atypical coliforms enumerated on m-Endo media (Table 5). Concentrations were lowered from an average of 6–10 (CFU ml^{-1}) before the first flushing to below the detection limit (0.25 CFU $100\,ml^{-1}$). This reduction can probably be attributable to flushing, since large concentrations of atypical coliforms were drained during the year 1 spot flushing.

In contrast to m-Endo counts, HPC bacteria (Table 5) increased significantly during the summer of year 2 (about 1.6 log and 1.2 log at the CLDI site and the GCI site, respectively). This result might not be directly attributable to flushing, since water temperatures were 1 °C warmer and free chlorine residuals lower in year 2 (0.00–0.03 vs. 0.03–0.07 mg $Cl_2\,l^{-1}$). In fact, no favourable long-term impact on chlorine residual persistence was observed at either location.

Finally, similar yearly comparisons were attempted for both turbidity and total iron concentrations (Table 5). Turbidity stayed relatively constant and total iron concentration went down for the GCI site. However, both parameters deteriorated at the CLDI site. Turbidity was especially high at this location even though total iron concentrations were only slightly higher. This would suggest a turbidity increase unrelated to corrosion phenomenon, although such a phenomenon was not identified.

DISCUSSION

The quantities of deposits found in the two pipes studied (0.26 to 0.40 g m^{-1}) were small compared with published values in the literature. Carrière *et al.* (2002) measured between 0.3 and 24 g m^{-1} of deposits in four Canadian networks. On cast iron pipes in France, Harmant *et al.* (2000) measured up to 12 g m^{-1} of loose deposits. These results highlight the fact that deposit accumulation is highly site specific and will vary to a large extent in different networks.

Many authors studied the microbial colonization of loose deposits and published data on the topic. In general, HPC measurements range between 1.8×10^6 and 2.0×10^8 CFU g^{-1} (LeChevallier *et al.* 1987; De Rosa 1993; Gauthier *et al.* 1996; Carrière *et al.* 2002). The enumeration of total bacteria resulted in values from 2.6×10^{10} to 9.4×10^{10} (bacteria g^{-1}) in Montreal

(Carrière 2002) and averaged 10^{10} in another study (Zacheus *et al.* 2001). The results obtained in this study ($1.5-1.9 \times 10^{11}$ bacteria g^{-1}) are slightly higher than other total counts mentioned previously, but are still within the same range. The hydraulic conditions (dead-end locations) may explain this higher result. Site-specific conditions (corrosion, water quality, organic matter content of deposits, etc.) may also explain the variations in bacterial densities of deposits from one DS to another. However, each study is in agreement in their conclusions that loose deposits are colonized by an abundant biomass.

The mid-term impact (in terms of weeks) of flushing on water quality has also been studied by Cossins *et al.* (1999). They obtained similar results: a decrease in turbidity and total iron over a six-week period. Recently, Lehtola *et al.* (2004) observed a decrease in microbial growth after cleaning pipes with air and high velocity flushing. While we observed an increase in chlorine residuals in one of the two sites, Cossins *et al.* (1999) did not measure an increase in chlorine residuals due to flushing. Regarding the short-term (24 hours) impact of flushing, none was noticed by Carrière (2002) in Jonquiere (Canada) and only reduced iron levels were observed by Lehtola *et al.* (2004). In this study, only reduced turbidities and iron levels were obtained through spot flushing. Therefore, only very short-term impacts of flushing are observed in dead-end locations (within the first 24 hours), after which time, the effects disappeared.

Long-term impacts (1 year) of flushing are hard to evaluate, primarily because of the numerous potential confounding factors (chlorine level, local hydraulic condition, breaks and repairs, intrusion, etc.). Among the analyses performed 1 year after flushing, one result was particularly interesting: the elimination of atypical coliforms in water samples. Reduction of total coliforms has also been observed by other researchers (Oliver and Pimentel 1998; Antoun *et al.* 1999). However, when other practices to reduce coliform occurrence are implemented (Oliver and Pimentel 1998) or when there is a change in disinfectant (Antoun *et al.* 1999), the true effect of flushing is hard to dissociate. The results obtained here support the hypothesis that flushing was responsible for the reduction of atypical coliform occurrence in these two dead-end locations. Although there is no clear evidence of the impact of atypical coliforms on public health, many distribution system managers exploit this information as an indicator of potential positive coliform events and, therefore, use them as a guideline to trigger spot flushing. Non-coliform bacteria, such as *Aeromonas hydrophila* (a candidate on the USEPA contaminant list), are known to grow on m-Endo media (Rompré *et al.* 2002). This emerging health issue supports the good management practice of minimizing the total counts of atypical coliforms.

CONCLUSIONS

This research project aimed at increasing the understanding of the benefits of spot flushing dead-end locations. The following conclusions can be drawn:

- Even if they appear identical (same source water, pipe diameter, hydraulic configuration, etc.), variability exists from one dead-end location to another.
- The usefulness of HPC analysis for characterizing microbiological quality of flushed waters is inadequate due to the interference of chlorine residual and colonized particles.

Regarding the spot flushing procedure and the short-term impacts:

- High numbers of atypical coliforms were drained during the first annual flushing procedure.
- During the first 24 h after flushing, chlorine decreased rapidly at both dead-end locations, while HPC counts increased during the same period.
- Minor improvements in water quality (mainly turbidity and total iron) were measured during the two weeks following the flushing procedure.

Regarding the second annual flushing:

- No reductions in the turbidity, suspended solids and microscopic bacterial counts were observed when comparing flushing profiles from both years.
- No atypical coliforms were recovered from the flushing waters during the second annual campaign.

Generally, water utilities will implement flushing procedures at a frequency based on good management

practices, past experiences, or cost constraints. With respect to spot flushing dead-end locations on a routine basis, the principal benefits observed in this specific DS were related to short-term improvements in water aesthetic characteristics. The reduction of atypical coliforms is also an interesting benefit to mention, although its health significance remains unclear at this time. Therefore, the routine spot flushing of dead-end locations will be triggered by consumer complaints or as a preventive measure for specific problem locations. The fact that the DS under investigation is unfavourable to iron corrosion is a key variable to take into account for explaining these conclusions.

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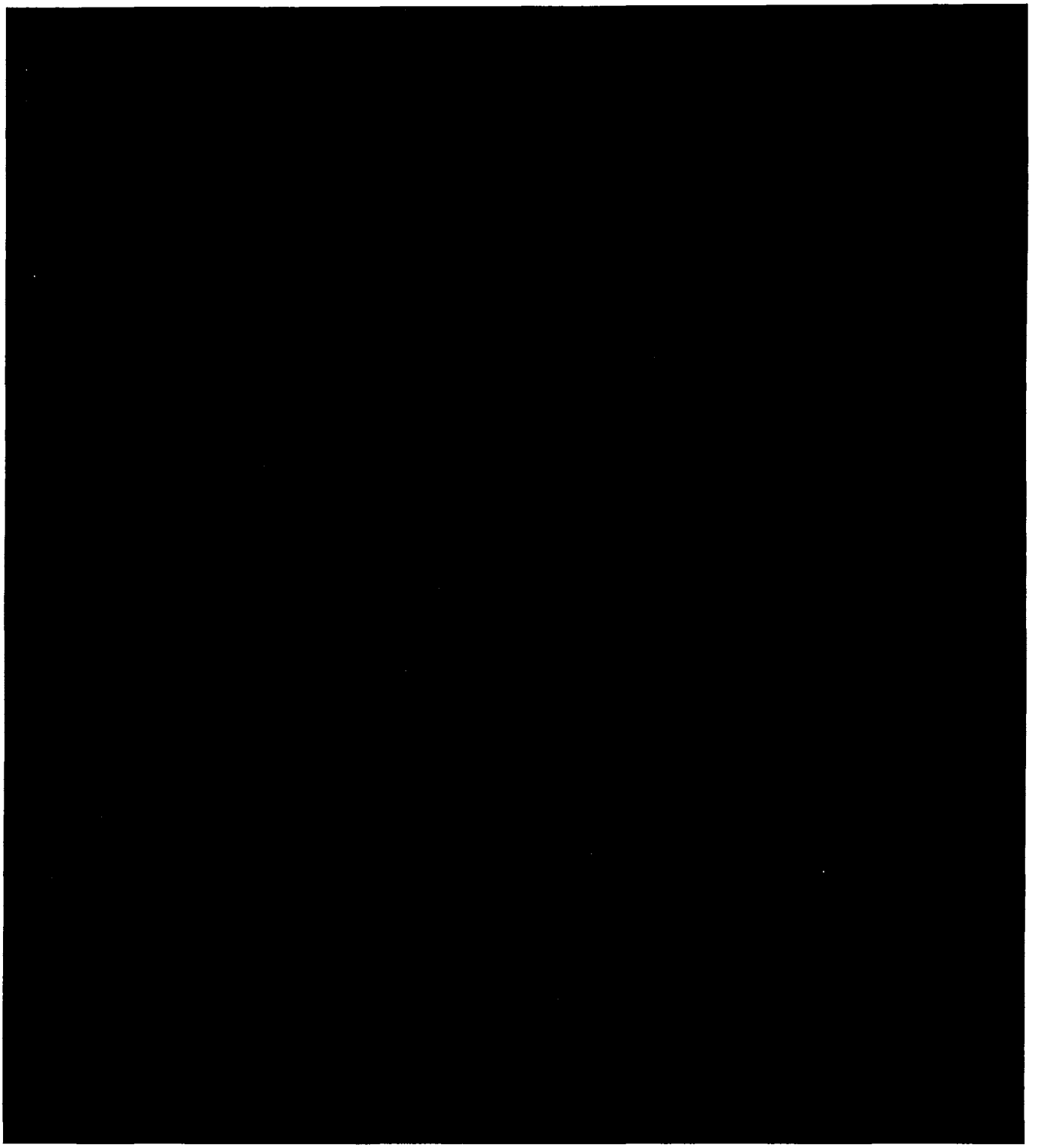
First received 28 April 2005; accepted in revised form 30 June 2005

Attachment WAS-2R

Data Request Responses of NOW to Q1.13 to 1.15



1.13 Please provide the exact dates (or as near as possible to exact dates) that Mr. Isgrigg performed work for the City of Charlestown.

Response

I do not have files prior to 1980. I was an Environmental Consultant from 1972-1979 for the City of Charlestown.

Response by Robert Isgrigg

1.14 Please identify the types of work Mr. Isgrigg performed for the City of Charlestown.

Response

From 1975-1979 My work included but was not limited City Engineer for Water System Design and Inspection and Sewage System Design and Inspections, FMHA grant and loan request preparations, drainage, roads, parks, and plat reviews, as well as attending City Council and Public Works meetings.

Response by Robert Isgrigg

1.15 Please produce any and all reports on the City of Charlestown's water system, or any aspect thereof, including alternate sources of water supply, prepared by Mr. Isgrigg for the City of Charlestown.

Response

There are no files available prior to 1980.

Response by Robert Isgrigg

Attachment WAS-3R

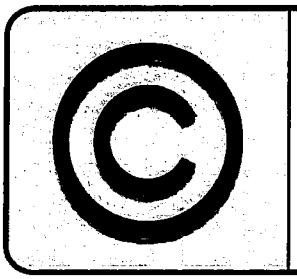
AWWA Manual M32: Computer Modeling of Water Distribution Systems

Computer Modeling of Water Distribution Systems

AWWA MANUAL M32

Third Edition

American Water Works Association



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AWWA MANUAL M32

Chapter 1

Introduction to Distribution System Modeling

1.1. INTRODUCTION

Water utilities seek to provide customers with a safe, reliable, continuous supply of high-quality water while minimizing costs. This water is often delivered through complex distribution systems involving miles of pipe and often incorporating numerous pumps, regulating valves, and storage reservoirs. The performance of these systems is often difficult to understand not only because of their physical size and complexity, but also because of the large amount of system information and data needed to fully grasp how they function. Sometimes, key pieces of information needed to understand a system are missing. One tool that has evolved over time to help water system designers, operators, and managers meet their goals of delivering safe, reliable water supply at a low cost is distribution system modeling.

Distribution system modeling involves the use of a computer model to predict the performance of the system to solve a wide variety of design, operational, and water quality problems. For example, a computer model can predict pressures and flows within a water system to evaluate a design and compare system performance against design standards. Models are also used in operational studies to solve problems, such as evaluating storage capacity, investigating control schemes, and finding ways to deliver water under difficult operating scenarios. Water quality models are used to compute water age, track disinfectant residuals, and reduce disinfection by-products in a distribution system.

Distribution system modeling began with the advent of analog computers and has evolved over time as computer software and hardware advanced to become more powerful and easier to use. Models containing thousands of pipes can now be created

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and used on readily available personal computers. Models that once took hours to run are now run in seconds or fractions of a second. Originally, models were used only to evaluate system hydraulic grades (and resulting system pressures) and flows. Although this capability remains at the very core of all water distribution modeling work, hydraulic models are now used to calculate water quality, energy costs, and optimize system operations just to name a few.

Historically, model building was an expensive and labor-intensive process. Now models can effectively share data using geographic information system (GIS), computer-aided design and drafting (CADD) systems, supervisory control and data acquisition (SCADA) systems, customer information system (CIS), computerized maintenance management system (CMMS), and asset management system (AMS) software, thus reducing the effort needed to create, update, and maintain a model. Information obtained from a model study can be filtered, organized, and presented in a variety of graphical and nongraphical ways so results can be more easily understood. These advances in technology have broadened the uses of distribution system modeling from just an infrastructure-planning tool to an integrated system used to improve operations, to analyze water quality, and to plan water system security improvements.

1.2. PURPOSE OF THE MANUAL

This manual (M32) was developed by the Engineering Modeling Applications Committee of the American Water Works Association (AWWA). The purpose of this manual is to share collective expertise on distribution system modeling so that it is better understood and applied more effectively to benefit water utilities and water customers everywhere. The manual is intended to be a basic level or primer reference manual to provide new to intermediate modelers with a basic foundation for water distribution system modeling. The manual is intended to take users through the modeling process from model development to system analysis as shown in Figure 1-1. The manual has in-depth discussion on

- Model construction and development
- Field data collection and testing
- Model calibration
- Steady-state analysis
- Extended-period simulation
- Water quality analysis
- Transient analysis
- Tank mixing analysis

M32 is designed to help modelers use water models as effective tools to plan, design, operate, and improve water quality within their water distribution systems.

1.3. HISTORICAL DEVELOPMENT OF DISTRIBUTION SYSTEM MODELING

1.3.1. Pre-1970

Manual engineering calculations for small-pipe systems were used through the 1960s. The Hardy-Cross method was sufficient for single-loop systems, but, without the aid of a computer, this method was impractical for systems having several loops. In 1950,

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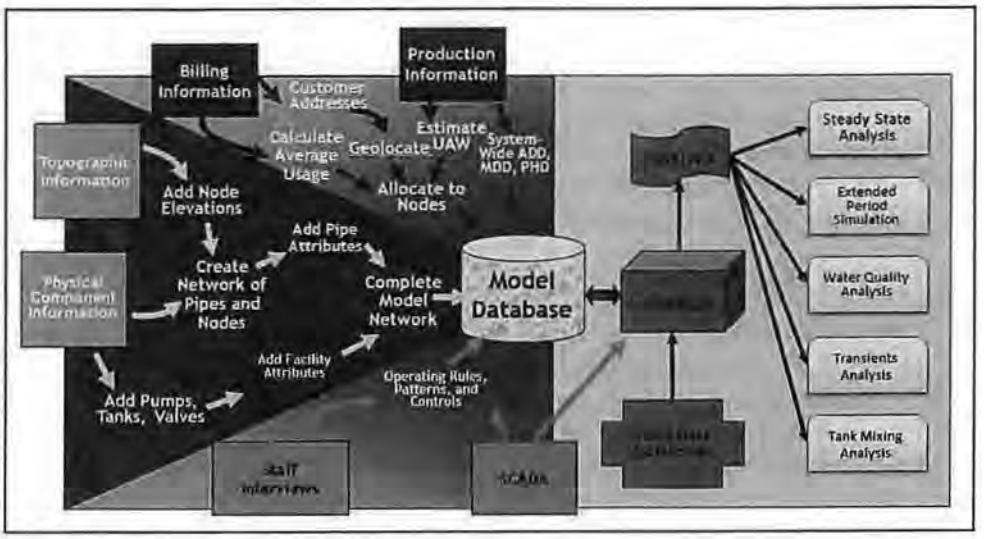

Figure 1-1 The process from model build to analysis

McIlroy simulated the behavior of water distribution systems using electronic circuitry. However, these physical models were large, expensive, and difficult to use. Digital computer models appeared in the 1960s. The FORTRAN programming language was primarily used to develop various models that became available to practicing engineers.

1.3.2. 1970–1990

Modeling software was developed with a variety of features, including extended period simulation and water quality analysis. Graphical user interface capabilities were incorporated for drawing the system and displaying output. Software "packages" were marketed that contained several compatible modular components. Some packages used other specialized software for data entry, display, and reporting of results.

1.3.3. 1990s

The 1990s experienced exponential growth of system modeling capabilities. EPANET, a modeling program developed by the US Environmental Protection Agency (USEPA) to support ongoing research, was made available to the public. Some vendors have taken the EPANET model and added an improved user interface. Software packages were designed to be compatible with other standard software packages, such as AutoCAD by Autodesk® and ArcView by ESRI®. These software packages were developed to integrate with various spreadsheet and database software to improve editing and drawing functions. The result was a familiar user interface and the ability to utilize existing software rather than having to create and update new software. Water quality modeling and extended period simulation became standard features within modeling software packages.

1.3.4. 2000s

Software packages were developed to work more effectively and sometimes were made to run within GIS software environments in response to the adaption of GIS as the asset data management platform by many water utilities. The use of GIS had become more common, and the quality of data was improving, which significantly reduced the effort

required to develop models. Automation tools became available for optimizing design and aiding the calibration process. Distribution system security concerns resulted in studies to develop emergency response plans to evaluate the impacts various disasters might have on water distribution systems. Models were used increasingly for water quality analyses, such as evaluating water age and constituent concentrations. USEPA also allowed hydraulic modeling as a means of determining preferred locations for water quality monitoring sites necessary to meet regulatory requirements.

1.3.5. Present

The availability of tremendous amounts of information from various data sources, real-time instrumentation, faster computers, high network bandwidth, and well-funded commercial and academic research and development expanded the applications of water modeling software to newer areas. Water leakage detection and management have helped reduce the amount of nonrevenue water. Pump scheduling optimization tools aid in energy management.

Additionally, transient analysis studies have resulted in designing for transient conditions to reduce potential pipe breaks and water contamination. As concern for water quality within water storage reservoirs increases, modeling of these facilities has become more important to assure proper mixing and meet more stringent quality regulations. Unidirectional flushing programs are being developed to enhance system water quality. Fire flow analysis and capital infrastructure improvement are now among the most popular uses for water modeling. Water quality and system security planning continue to be critical applications because of increased regulations and national threat levels. Software packages now have the sophistication to perform network calibrations as well as help determine where closed pipes exist within the system. The current water models are helping to sustain infrastructure in challenging economic times by allowing system owners to quantify and reduce operating hours, water loss, pipe breaks, energy usage, and a host of other related costs.

1.4. DISTRIBUTION SYSTEM MODELING APPLICATIONS

1.4.1. Benefits of Computer Modeling

To solve hydraulic system problems, there must be one equation for each pipe, pump, and valve, or for each junction, depending on the method used to solve for the unknowns in the hydraulic calculations. The number of equations that must be set up and solved in a system hydraulics problem is very large, even for the most basic water distribution system. The value of a computer model is that tedious calculations are performed much more quickly and more accurately than manual calculations. In addition, the computer is an effective means of managing large amounts of data necessary to analyze a water distribution system. By using computer models, rather than focusing on the procedural mechanics of solving system equations, decision makers can focus more on communicating modeling results and formulating and comparing system design alternatives. Computer models of water distribution systems are not an end in themselves but are tools to help managers, engineers, planners, and operations staff. When properly implemented, models become an integral part of the decision-making process for planning, design, and operation of water distribution systems. Engineers and operators of a water system are still ultimately responsible for decisions based on the results that computer models provide.

Distribution system modeling software generally falls into four categories of application: planning, engineering design, system operations, and water quality improvement.

1.4.2. Planning

A primary planning application of distribution system analysis software is used for assisting in the development of long-range capital improvement plans, which include scheduling, staging, sizing, and establishing preliminary routing and location of future facilities. Other applications include planning for water main rehabilitation and system improvement. Rehabilitation plans identify and prioritize mains that need to be cleaned and/or lined. Distribution system improvement plans identify where installation of new mains, storage facilities, and pump stations are necessary to keep pace with growth and/or new utility standards and regulations. The following are examples of several specific system analysis planning applications.

1.4.2.1. Capital Improvement Program. Water utilities usually have a master plan identifying future capital improvements necessary to respond to projected community growth and replacement of aging infrastructure. These plans typically extend from 5 up to 20 years or more. A model is usually used to identify and schedule these long-term capital improvements.

1.4.2.2. Conservation Impact Studies. Water conservation is desirable for most communities to stretch limited water supplies or to reduce water use so that some capital improvements can be delayed or eliminated. A model is useful to apply expected effects of various conservation measures onto projected system demands to evaluate the potential for success.

1.4.2.3. Water Main Rehabilitation Program. A model is used to identify specific water mains that tend to bottleneck the system, either due to increased demands or tuberculated pipes. The model is used to determine the potential hydraulic effects of replacing, upsizing, or rehabilitating aging mains to evaluate the effectiveness of various alternatives.

1.4.2.4. Reservoir Siting. A reservoir should be sited in a location that optimizes water turnover, that effectively meets peak demands, and that can recharge efficiently during off-peak demand periods. The model is used to explore these scenarios to fine-tune preferred hydraulic solutions.

1.4.3. Engineering Design

Engineering design applications include the sizing of various types of facilities including pipelines, pump stations, pressure regulating valves, tanks, and reservoirs. These facilities are sized using pressures and flows that result from distribution systems modeling. In addition, system performance can be analyzed under fire flow conditions and adjustments made to meet fire demand. The following are examples of engineering design problems that are solved using computer models.

1.4.3.1. Fire Flow Studies. The model is used to simulate fire flow demands at hydrant locations throughout a locality to determine how much water can be delivered to specific fire hydrants within the prescribed fire-flow pressure constraints. Where deficiencies are discovered, distribution system improvements with main reinforcements or looping can also be evaluated with the model. These studies are also used to demonstrate compliance with fire protection standards.

1.4.3.2. Valve Sizing. A distribution system often has pressure-regulating or pressure-sustaining valves to direct flow to different hydraulic zones. Distribution systems may also have throttle valves to direct flow within a zone to different reservoirs

or storage locations. The model is used to determine how much flow is required through these valves so the valves are sized appropriately.

1.4.3.3. Reservoir Sizing. Reservoirs are often sized by estimating the total diurnal flow, fire flow, and emergency storage requirements within a particular zone. However, reservoir capacity should also consider the rate of water delivery to the reservoir location and the size of the distribution area. A model is useful to evaluate inflows and outflows to a reservoir to determine an optimal size for a particular location and/or to specify other improvements so that the preferred reservoir site is adequately served by transmission mains and pumping stations.

1.4.3.4. Pump Station/Pump Sizing. Models are used to calculate system curves of distribution systems so that pumps are selected that provide the necessary flow and head. Once sized, the proposed pumps are then used in the model under a wide range of system settings to determine how well they perform under various operating conditions.

1.4.3.5. Calculation of Pressure and Flow at Particular Locations. A water distribution system must provide adequate amounts of water at pressures within a range typically specified by standards used by water utility. A model's core functionality is hydraulic grade and flow calculations. Models are used to predict pressures under specific demand conditions and under a wide variety of scenarios to identify low pressures and to select infrastructure that will improve flow or pressure deficiencies.

1.4.3.6. Zone Boundary Selection. Most water distribution systems deliver water to customers located at a range of different elevations. Distribution systems are separated into pressure zones that follow consistent elevation contours to keep pressures within reasonable ranges. Models are useful to evaluate potential zone boundaries and to determine the adequacy of infrastructure delivering water to each zone.

1.4.4. System Operations

Applications for operations include assisting in the development of operating parameters and strategies, operator training programs, and system troubleshooting guidelines. Operating strategies may be driven by emergency conditions, energy management, water availability, and so on. For example, contingency plans are developed in the event of a key facility component failure, such as a pump station failure. Distribution system modeling is also used to develop operational strategies for energy management and water quality guidelines. Strategies for shifting supply between treatment plants are developed to determine the most efficient use of available water. Optimizing these strategies results in efficient use of pipeline capacities, tank levels, and required treatment plant production, among other things.

1.4.4.1. Personnel Training. Models are used for training personnel that operate the distribution system. System operators can experiment with the model to determine how the system responds to changes in operating parameters and conditions.

1.4.4.2. Troubleshooting. Models are used to troubleshoot potential causes of various problems, such as low pressure, water circulation issues, and events that would otherwise be inexplicable.

1.4.4.3. Water Loss Calculations. In the event of a major main break, the model is used to estimate the amount of water lost through the break as may be required for damage assessments.

1.4.4.4. Emergency Operations Scenarios. Water distribution systems often have critical components; if the components fail, water delivery is interrupted. A model is useful to evaluate the potential impact of a failure and to devise means of reducing the damage or impact of a critical component failure.

1.4.4.5. Source Management. Water treatment plants are sometimes taken out of service for repairs or because the water supply is unavailable for a time. Furthermore, the quality of water at one source may be better at certain times of the year, so the use of the high-quality source can be maximized. The model is useful to devise operating scenarios that best utilize multiple water sources to achieve desired system objectives.

1.4.4.6. Model Calibration. Model calibration is typically thought of as a step in developing a useful model. However, the calibration process is useful to operations staff in discovering anomalies in the distribution system, such as closed valves, tuberculated pipes, leaks, or false or incomplete infrastructure data. This information, once discovered through the calibration process, can explain operational difficulties and identify distribution system problems requiring the development of solutions to resolve and improve system operation.

1.4.4.7. Main Flushing Programs. A hydraulic model is an excellent tool for developing a main flushing program. The model is useful to identify flow paths in the distribution systems so that appropriate flushing locations and sequences can be established.

1.4.4.8. Area Isolation. Water utilities frequently need to isolate a specific area for maintenance or other work. Often, it is helpful to identify those customers whose service will be interrupted by the isolation event. In addition, those planning the event need to know which valves to close in order to minimize impacts of the isolation. Hydraulic models are tools used to accomplish this task.

1.4.4.9. Energy Cost Management. Nationwide, about 4 percent of US power generation is used for water supply and treatment. Electricity represents approximately 75 percent of the cost of municipal water processing and distribution according to the Department of Energy (DOE). Of this, pumping typically accounts for 75 to 80 percent of the power consumed by water utilities. With energy costs being such a high percentage of the overall costs, utilities are trying to find ways to reduce their overall energy consumption. Many of today's models have features to help quantify energy consumption and its related costs, and also have the capability to assist with optimizing pump operation to help reduce electrical usage.

1.4.5. Water Quality Improvement

Water quality regulations in the United States are limiting the level of disinfection byproducts (DBPs) in water distribution systems. Standards and expectations for water quality have increased the demand for water quality analysis in these systems. Following are examples of how distribution system modeling is used to improve water quality.

1.4.5.1. Constituent Tracking. If a contaminant enters the distribution system through a treatment plant, well, reservoir, or other location, it can quickly spread throughout the distribution system, affecting water quality of consumers receiving water from that source. The contaminated water may also mix with water from other sources. A model can be used to predict contaminant levels and zones of influence within the distribution system. Customers potentially affected by the contaminant can be identified, and portions of the distribution system that need to be flushed can be identified.

1.4.5.2. Water Source/Age Tracking. Water age is another important water quality parameter in a distribution system. Chlorine levels decay over time, increasing the tendency for DBP levels to increase as chlorine reacts with organic compounds in the water. To maintain water quality, water utilities are striving to minimize water age. This is done by ensuring that water in reservoirs and storage facilities turns

over regularly to minimize stagnation and dead ends. When multiple sources serve an area, distribution system modeling helps devise operating strategies to reduce water age where possible.

1.4.5.3. Chlorine Levels. A model is used to predict chlorine decay in a distribution system. This is useful to determine chlorination levels at the treatment plant and to select rechlorination sites where necessary to boost chlorine levels.

1.4.5.4. Water Quality Monitoring Locations. Parts of recent water quality regulations proposed by USEPA include selecting establishing sites within a system to place permanent DBP level monitors and demonstrate compliance with federal regulations. A water model can help identify the most appropriate locations for these water quality monitors.

1.5. HYDRAULIC MODELS

A computer model is composed of two parts: a database and a computer program. The database contains information that describes the infrastructure, demands, and operational characteristics of the system. The computer program solves a set of energy, continuity, transport, or optimization equations to solve for pressure flows, tank levels, valve position, pump status, water age, or water chemical concentrations. The computer program also aids in creating and maintaining the database and presents model results in graphical and tabular forms.

1.5.1. Model Data

A hydraulic model consists of two types of elements: links and nodes. Depending on the model, the major components such as pipes, junctions, pumps, tanks, hydrants, and valves are represented by either a link or a node. Other components such as customer points, rupture disks, or orifices may also be available. The model is a valuable asset to the user and is the result of substantial effort in data collection, entry, and quality control. Such an investment should be protected by maintaining its value over time. One of the keys to maintaining the hydraulic model's value is making sure the model is updated with appropriate changes in infrastructure components, system demands, or operating parameters. To maintain confidence in the results of the model, data within the model should best represent the current system configuration.

1.5.2. Modeling Software

1.5.2.1. Modeling Equations. At the heart of water distribution system modeling software is a system solution algorithm, which solves hydraulic and water quality equations. Depending on the problem, there are several kinds of equations that are solved.

Continuity equations enforce the law of the conservation of mass by keeping track of water flow, making certain that the total flow into a node equals the flow out, plus or minus any changes in storage or demand.

Energy equations enforce the law of the conservation of energy by accounting for energy loss caused by friction in pipes, valves, and fittings, and energy added by pumps. The resulting total energy balance around each closed loop in the system should be zero.

Transport equations in water quality models account for the movement of substances (pollutants or tracers) through a distribution system and any reactions that may occur.

1.5.2.2. Water Model Analysis

1.5.2.2.1. Steady-State Analyses. A steady-state analysis provides a "snapshot" of pipe system conditions at any instant in time. Steady-state analyses are typically used to evaluate maximum day, peak hour, and fire flow conditions.

1.5.2.2.2. Extended-Period Simulation. An extended-period simulation is a series of steady-state simulations at specified intervals performed over a specified time period. This capability may be used, for instance, to model the operation of a water system over a 24-hour period with an analysis run for each hour. Such a simulation is useful in modeling variations in demand, reservoir operations, water quality, and water transfers through transmission pipelines. Extended-period simulation requires that the system package model flow and pressure switches incorporate demand diurnal patterns for nodes and allow for varying tank configurations.

1.5.2.3. Specialized Model Analysis

1.5.2.3.1. Automated Fire Flow Calculation. Some distribution system modeling packages automatically calculate the available fire flow at each node. These calculations are useful in identifying areas having weak firefighting capability.

1.5.2.3.2. Water Quality. Utilities are increasingly interested in modeling the water quality within a distribution system, particularly the decay of chlorine residual and water age. The ability to perform water quality analysis should be a standard part of any modeling package.

1.5.2.3.3. Transients. Transient pressures (water hammer) can cause pipe breaks, contamination, joints to shift and leak, collapse of pipes, and other serious damage to water distribution networks. A transient event is caused by a sudden change in flow velocity that can be created by a valve that is closed quickly, pump failure or a pump simply shutting down, a mishandled fire hydrant, and so on. After identifying a transient condition (valve closure), water-transient analysis software is able to identify where a transient event is likely to happen and evaluate multiple transient protection devices that can help mitigate or prevent damage.

1.5.2.3.4. Energy Analysis. Energy analysis, available in most commercial software, can help identify inefficient pumps and determine better operational strategies. Energy costs are a significant portion of the total expense for most utilities. Some electricity providers have variable rates and electricity costs can vary depending on when the pumps are operated. Energy consumption and energy cost can be quantified through this type of analysis.

1.5.2.4. Model Functionality

1.5.2.4.1. Scenario Generation. Distribution systems with any level of complexity are modeled more easily by applying various combinations of demands, facilities, and operating parameters, such as regulating valve and pumping unit settings. System modeling packages may allow variation and combination of these three types of data in a simulation by keeping them in separate databases for specific or combined model access.

1.5.2.4.2. Selective Reporting of Results. The user is able to specify the results to be reported in tabular form so pages of output need not be generated after each run when the user may only be interested in results in one specific area of the system. This user-specific reporting saves hard disk space and paper while speeding the user's review time.

1.5.2.4.3. Data Management. Modelers are able to export and import data and model results to and from other applications, such as spreadsheets, databases, and GIS systems. These capabilities are widely available and are an important part of any modeling package.

1.5.3. Related Software Systems

Information management trends within utilities are moving toward better information sharing so that decision makers can have as many information resources as possible to make the best decisions. This is often done by using both common databases and files that are shared by a variety of software applications. Distribution system modeling uses a wide variety of information about physical assets, customers, billing data, geographical information, and operational information. Furthermore, modeling activities can benefit a variety of groups within the utility, strengthening the ability to communicate and share information. Brief descriptions of software systems, information systems, and/or corporate-wide databases that are in some way related to distribution system modeling are listed below.

1.5.3.1. Geographic Information System (GIS). A GIS stores and displays geographically referenced information, i.e., information that is easily understood through map display. Spatial relationships between entities are significant for most information stored in GIS. GIS has potential to store vast amounts of information useful for system analysis, including pipe assets, customer meter locations, zoning and land parcel data, aerial photography or other land bases, street locations, digital terrain models (DTMs), digital elevation models (DEMs), and jurisdictional boundaries.

Information in GIS is saved in file formats that most modeling software packages can read. Alternatively, information in a GIS database is translated into a format that can be imported into the model database. Some GIS land-base information and other data layers are displayed directly within some modeling packages. The usefulness of GIS pipe data is often dependent on the way the information is collected and stored in the GIS database. Pipe data in GIS are most useful if the topology and connectivity are already established in the GIS database.

1.5.3.2. Computer-Aided Design and Drafting (CADD). CADD systems are used to manage maps of water distribution systems and are, therefore, a source of pipe information that can be transferred to the model. In addition, CADD systems are useful as a means to display model information and results.

1.5.3.3. Supervisory Control and Data Acquisition (SCADA). SCADA systems are used to remotely control the operation of pump stations, valves, and other system infrastructure. They are also useful to collect data such as pressures, flows, reservoir levels, valve positions, pump status and speed, chlorine levels, and other information useful in monitoring the system. This information is collected at regular intervals and stored for extended periods of time. SCADA is a good source of operational information, as well as calibration data. SCADA data are also used to define the starting point for operational analyses by using the data to define boundary conditions placed in the model. SCADA data usually do not go into the model directly. An interface is usually required that could be as complex as a custom software routine or as simple as importing SCADA data into a spreadsheet via a comma-separated values (CSV) file and formatting the data for import into the model.

1.5.3.4. Customer Information System (CIS). CIS is useful to develop demands based on customer water-use information. Typically, average annual water usage and customer rate classes are extracted from CIS and then linked to the model via GIS, modeling, or customized tools. The specifics of how CIS data can be linked to the model are highly dependent on the data and software used by the utility.

1.5.3.5. Laboratory Information Management System (LIMS). LIMS instruments, protocols, standards, and software are vital components in the monitoring of water quality and ensuring safety and regulatory compliance. Laboratories continuously sample water from various locations and are expected to accurately report any possible water quality issues immediately. Water models can assist with

developing flushing routines, chlorination, contaminant tracking, water age, and independently locating the likely source of these water issues.

1.5.3.6. Computerized Maintenance Management System (CMMS). CMMS can act as an access point to post and retrieve system information and costs for operations, maintenance, and rehabilitation. Typically, CMMS is used to store asset inventory, condition assessments, parts inventory, preventative maintenance activities, service requests, and work orders, all of which can be linked to the object by location and imported into models for a variety of applications.

1.5.3.7. Asset Management System (AMS). Similar to CMMS, asset management software is becoming more prevalent as a strategic planning tool for water utilities. This management tool combines long-range planning, life-cycle costing, proactive operations and maintenance, and capital replacement plans based on cost-benefit analyses. These applications are used to meet a wide range of management challenges for water utilities. Water modeling is an integral part of the long-range, decision-making process and can be incorporated into a comprehensive asset management program for achieving system sustainability. AMS seeks to provide informed, timely, and cost-effective decision making for both day-to-day operations and long-term planning. Many of these programs also enable users to integrate many different applications and data sets already in use, including GIS, CMMS, and other work orders or field data systems (SCADA) as well as hydraulic modeling/analysis software.

1.6. DISTRIBUTION SYSTEM MODELING WITHIN THE UTILITY

A successful distribution system modeling program functions best with a team of individuals who can perform system analysis and effectively provide system modeling results to decision makers within the utility. Issues that often need to be addressed when implementing a modeling program are outlined in this section.

1.6.1. In-House Modeling Versus Outside Consultants

The utility should decide whether the model will be developed and maintained by the utility or by an outside consultant.

Usually, a utility understands its system very well and has easy access to model-related information. However, a utility may not have the expertise or resources to develop and maintain the model. Some utilities construct and run their own models, while others hire outside consultants to perform some or all of the modeling work. A model owner who is committed to maintaining the model and to developing expertise is essential for an in-house modeling program. If consultants perform the modeling, ownership rights of the model and data should be clearly delineated in a contract. Regardless of who performs the modeling work, a long-term commitment to maintaining the model and retaining experts to maintain and utilize the model regularly are necessary components of success.

1.6.2. One-Time Versus Long-Term Use

Many decisions made during model development depend on whether the model is used for solving a short-lived problem or for periodic use over an extended period of time. If the model is used for a specific problem, questions regarding the level of detail are easily answered based on satisfying the needs of the problem. If the model is to be used for many purposes, the model should be developed to serve the most demanding applications and simplified, if necessary, for other applications. For example, a model developed to assist in master planning may not contain enough detail for determining available fire flows in subdivisions or for water quality modeling within the system.

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Decisions must be made on whether this level of detail should be included in the model or added later, if required. Currently, the power of computers makes it practical to use a complex model for even a simple task. However, many software packages have tools to simplify a model when necessary.

1.6.3. Model Developer Versus Decision Maker

There are two distinct roles in model development: the role of the modeler and the role of the decision maker. The modeler is the person responsible for initial development and running the model. The decision maker is a professional engineer or licensed operator who interprets and makes decisions based on outputs from the model. These two roles could be filled by one individual, two individuals, or even two different companies. The key element is that the decision maker must be satisfied that the modeler has indeed developed a system model that is adequate for the problem or problems being considered. Calibration and sensitivity analyses are two methods available to the decision maker to assure that the model is adequate for the intended purpose.

1.6.4. Modelers Versus Rest of Utility

It is essential that modeling, whether performed in-house or by a consultant, be done with the awareness and cooperation of the rest of the utility. While some individuals may serve as the experts on the model, all interested parties should have input in model development, understand the capabilities and limitations of the model, and appreciate the important role of modeling in decision making. Modeling should be done with thorough consideration of utility operations. For example, utility operators have great insights into the operation of a system, as well as its physical limitations. By working with the operations staff, the modeler can incorporate operators' insights into the model, and operations staff can become sufficiently comfortable with the model to trust its results.

1.6.5. Skeletonized Versus All-Mains Models

All-mains models are becoming increasingly popular with the availability of faster computers and comprehensive GIS data. Choosing to use an all-mains model versus a skeletonized model depends completely on the intended use of the model. All-mains models are better suited for computing fire flow and water quality, while skeletonized models offer quicker results to understand overall system demand and capacity over time. Another popular approach is to model all mains greater than six or eight inches (15.3–20.3 cm) in diameter. Several modelers maintain both skeletonized and all-mains models and choose between them based on the application type.

1.7. TRENDS

Several significant trends in system modeling have become apparent through network modeling surveys, presentations and discussions at conferences, and *Journal AWWA* articles. Some trends are now well established while others are still in their infancy.

1.7.1. Common Databases

In some utilities, computer systems are organized around a type of architecture where common databases are shared by many applications. In such a framework, a distribution systems modeling package extracts data from a large *enterprise* database that is shared by many work groups. A database system that supports multiple work groups gets input from key stakeholders and integrates interdepartmental work flows. Asset

management, billing, customer service, work management, facilities, engineering, GIS, CADD, hydraulic modeling, document management, permitting, water quality testing, and other work groups have information that can be linked geospatially. An enterprise database will reduce duplication of efforts, inaccuracies, and outdated information.

1.7.2. Model Sophistication

Model surveys reveal a strong trend toward all-mains models and extended-period simulation to examine water quality issues in distribution systems. The availability of faster processors, memory efficient operating systems, bandwidth, and larger storage capacities has removed several system limitations. The increase in technical resources allocated for modeling, software's ability to connect with multiple data sources, data loggers, and easier model building tools have expanded the power of models.

1.7.3. Demand Allocation

Billing meter information, land use, and population data are used in model loading. This type of information is generally available from GIS and CIS. There is increased interest in demand allocation based on future needs such as estimated land use or population growth in combination with demand density. Demand patterns are generated for day of the week, months, special events, and seasonal variations. This helps with evaluating the system for a wider variety of scenarios.

1.7.4. Information Systems Integration

The near term will see a far greater integration of multiple information and data systems such as GIS, CADD, SCADA, CIS, CMMS, and AMS. This will result in a more accurate model because of demand and distribution network fidelity. In addition, this will facilitate optimization of operational workflows and the road map for future data needs.

1.7.5. Energy Analyses

Water models are increasingly used to improve energy efficiency through better pump scheduling and operations. As energy rates increase, there is greater emphasis on reducing energy consumption and resultant energy costs. Models are used to help identify pumps that need maintenance or replacement or evaluate new energy-efficient pumps from multiple manufacturers. In addition, they are used to evaluate pump combinations that work well, and choose between variable speed and constant speed pumps.

1.7.6. Automated Meter Reading (AMR)

AMR is used for automatically collecting data including demand and status from water meters. This data are then transferred to a database for billing and analysis. Utility providers are able to collect this information in real time (wired or wireless) without having to travel to each physical location to read a meter.

1.7.7. Infrastructure Upgrade (maintenance and rehabilitation versus replacement)

Models are helping with the capital improvement financial analysis and also identifying the critical segments in a water distribution network. Models can help reduce and optimize the overall life-cycle costs of pipes by offering alternatives and can compare potential solutions by cost/benefit ratio, pressure/flow service goals, and available budget.

1.7.8. Transient Analysis

Increased awareness that pipe breaks are not necessarily caused by aging infrastructure and that installing a water hammer protection device is cheaper than replacing a pipe network has caused an increase in transient analysis. There is an improved effort in educating the field crew, contractors, and fire departments that closing a valve or hydrant quickly can result in a water hammer at a nearby location. These days, being able to quantify the magnitude of the transients has helped size and identify the right type of hammer protection device.

1.7.9. Water Quality Analyses

Many system modeling packages have the ability to model water quality parameters in a pipe network and in reservoirs. Utilities find this valuable in response to new water quality regulations and to heightened public interest in water quality. In addition to being able to model water age, source tracing, and constituent concentration (chlorine, chloramine, etc.) in a water distribution network, some models can perform disinfection by-product formation analyses.

1.7.10. Tank Mixing

Driven by the need to improve water quality and reduce storage times, tank mixing is gaining popularity. Tanks can be mixed properly through better design of inflow and outflow ports and control devices, mechanical mixers, and improved operational strategies.

1.7.11. Water Security

System design and operation decisions are increasingly based on assessing risks and vulnerabilities of water supply systems. The ability to track contaminants and isolate and flush potentially affected areas is increasingly important to safe, secure water systems. Water models are used to evaluate multiple scenarios of contamination at susceptible and publicly accessible locations of distribution networks. This aids in the placement of water quality sensors and reduces system vulnerabilities.

1.7.12. Emergency Planning

Emergency planning can range from main breaks to contamination to power failure. Planning ahead may help mitigate potential disasters. Planning protocols including the US government's national incident management system (NIMS) and several state emergency management systems are available to assist with structured emergency planning. System modeling will play an integral part in long-term emergency planning efforts.

1.7.13. Real-Time Modeling

In the past, distribution system modeling packages were typically too slow and unwieldy for system operators to use in generating operating strategies and testing "what-if" scenarios. High-speed processing and data input available from SCADA allow utilities to provide modeling capabilities to their operators. Careful consideration must be given to the user interface in this regard, and simplified models may be required.

1.8. SUMMARY

Water utilities seek to deliver a safe, reliable, continuous supply of high-quality water to customers on a daily basis through a complex distribution network while minimizing costs. Once developed and calibrated, a water distribution model can predict the behavior of a water distribution system, providing an effective tool to help utility service providers meet these goals. This chapter has provided a fundamental overview of hydraulic modeling including a timeline of distribution modeling development, various water modeling applications, essential and desirable features in hydraulic modeling software, and emerging trends. The following chapters provide more detail and guidance in implementing model development and utilizing water models in various applications to analyze, design, and improve the performance of water distribution systems.

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Attachment WAS-4R

Sludge Volume Calculation of William A. Saegesser

"Sludge" Volume to System Volume Calculation

$L := 55\ mi$ Distribution system length

$D := 6\ in$ Assumed average main diameter

$T_{vol} := 600000 \cdot gal$ Storage tank volume

$Sys_{vol} := L \cdot \left(\frac{\pi \cdot D^2}{4}\right) + T_{vol} = \left(1.372 \cdot 10^5\right)\ ft^3$ Distribution System Volume

$\gamma_w := 62.4\ \frac{lb}{ft^3}$ Unit weight of water

$Sludge := \frac{1600\ lb}{day} \cdot 50\ yr = \left(2.922 \cdot 10^7\right)\ lb$ Sludge production according to Isgrigg, accumulated over 50 year period

$Sludge_{vol} := \frac{Sludge}{\gamma_w} = \left(4.683 \cdot 10^5\right)\ ft^3$ Accumulated sludge volume per Isgrigg mass load accumulated over 50 year period.

$Ratio := \frac{Sludge_{vol}}{Sys_{vol}} = 3.412$ Ratio of sludge volume to system storage volume.

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Attachment WAS-5R

Data Request Responses of NOW to Q1.3 to 1.5

DATA REQUESTS

1.3 Since January 1, 2007, how many water treatment plants has Mr. Isgrigg designed? If any, please identify each, including the client and the capacity of such water treatment plant.

Response

By choice, I have not designed any water treatment plants since 2007.

Response by Robert Isgrigg.

1.4 Since January 1, 2007, how many water distribution systems has Mr. Isgrigg designed? If any, please identify each, including the client and the geographic size and miles within such water distribution system.

Response

None, by choice.

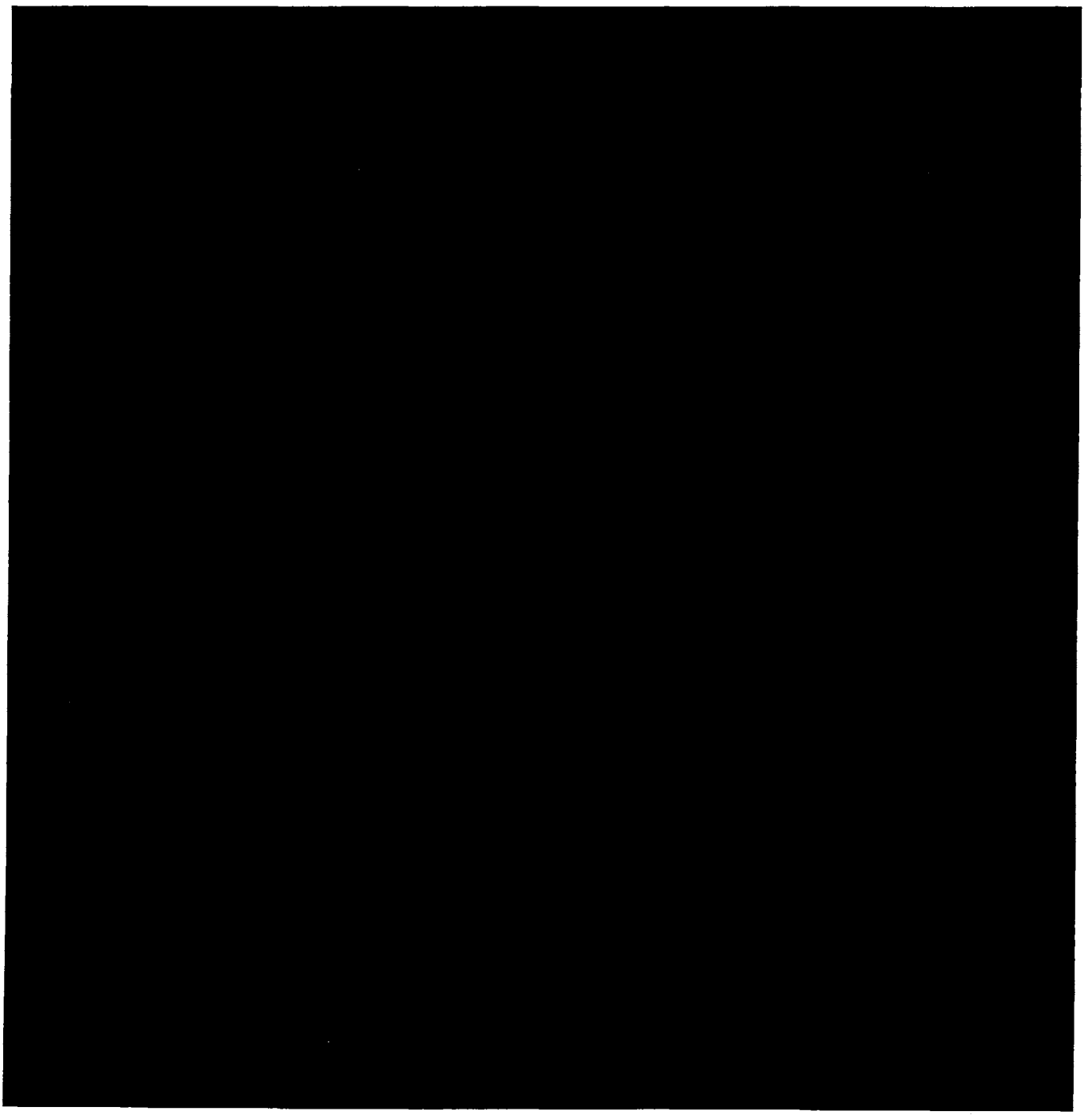
Response by Robert Isgrigg.

1.5 Since January 1, 2007, how many water storage facilities has Mr. Isgrigg designed. If any, please identify each, including the client and the storage capacity of each water storage facility.

Response

None, by choice.

Response by Robert Isgrigg.



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Attachment WAS-6R

Data Request Responses of Charlestown to OUCC Q5.6

Q 5.6. Does Charlestown have a water main and hydrant flushing program? If so, describe the program and provide the following information:

a. Total miles of water mains and number of hydrants flushed in 2014, 2015, and 2016.

b. Total number of days that water mains and hydrants were flushed in 2014, 2015, and 2016.

c. Total labor hours spent on water main and hydrant flushing in 2014, 2015, and 2016.

Objection: The City objects to the Data Request on the basis of the foregoing general objections. The City objects to the Data Request on the separate and independent grounds that the Data Request seeks information that requires the City to perform an analysis that it has not performed and to which it objects performing. The City has not performed an analysis of the total water mains and number of hydrants flushed during the requested years.

Response: Yes.

a. Flushing is system-wide. Please see the appraisal (Joint Petitioners' Exhibit 1, Attachment GRH-2).

b. 2014 & 2015: Approximately 12 days per year.

2016: Approximately 6 days per year.

c. Between 30-60 hours per year.

Attachment WAS-7R

Consumer Confidence Report of DNR Plant (showing 2 mgd treatment plant capacity)

CONSUMER CONFIDENCE REPORT CERTIFICATION IN DRINKING WATER

State Form 54187 (R / 7-14)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (IDEM)
OFFICE OF WATER QUALITY – DRINKING WATER BRANCH – COMPLIANCE SECTION

IDEM – DRINKING WATER BRANCH
MC 66-34
100 N. Senate Ave.
Indianapolis, IN 46204-2251
Telephone: 317-234-7435
Fax: 317-234-7436
Email: dwbmgr@idem.in.gov

INSTRUCTIONS: *1. Complete Consumer Confidence Report (CCR) Certification form.*
2. Submit the certification form to IDEM by October 1st of reporting year.

CERTIFICATION

System Name: Charlestown State Park/RRCC Water System

PWSID Number: IN5210018

The community water system named above hereby confirms that its consumer confidence report has been distributed to customers (and appropriate notices of availability have been given). Further, the system certifies that the information contained in the report is correct and consistent with the compliance monitoring data previously submitted to primacy agency.

Certified by:

Name Marc Hildenbrand Signature M Hildenbrand

Title Director-Project Management & Utility Operations

Telephone number 812-285-8979 Date *(month, day, year)* 05 / 09 / 2017

*** You are not required by EPA rules to report the following information, but you may want to provide it to your state. *Check all items that apply.*

☑ The consumer confidence report (CCR) was distributed by mail or other direct delivery on:

Date *(month, day, year)* 04 / 07 / 2017

Specify other delivery methods below:

_____

_____

☑ Good faith efforts were used to reach non-bill paying consumers. Those efforts included the following methods as recommended by the primacy agency:

- ☑ posting the CCR on the Internet at www. riverridgecc.com/projects-info/general-information
- ☐ mailing the CCR to postal patrons within the service area *(attach ZIP codes served)*
- ☐ advertising availability of the CCR in news media *(attach copy of announcement)*
- ☐ publication of CCR in local newspaper *(attach a copy)*
- ☑ posting the CCR in public places *(attach a list of locations)*
- ☐ delivering multiple copies to single bill addresses serving several persons such as apartments, businesses, and large private employers
- ☐ delivering CCR copies to community organizations *(attach a list)*

☐ For systems serving at least 100,000 persons only, CCR was posted on a publicly-accessible Internet site at the address: www._____.

☑ Delivered CCR to other agencies as required by the primacy agency *(attach a list)*.

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CONSUMER CONFIDENCE REPORT CERTIFICATION FORM ATTACHMENT

Posting In Public Place

- River Ridge Development Authority
  6200 E. Highway 62, Building 2501, Suite 600
  Jeffersonville, IN 47130

Delivery to Other Agencies

- Watson Water
  4106 Utica Sellersburg Rd
  Jeffersonville, IN 47130

Charlestown State Park/River Ridge Commerce Center
2016 Consumer Confidence Report
PWSID # IN5210018

River Ridge Commerce Center is pleased to present this year's Annual Quality Water Report. This report is designed to inform you about the quality water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water.

River Ridge Commerce Center partnered with Louisville Water Company in July 2011, to operate the water treatment plant, oversee water quality and compliance, and conduct an initial water system assessment. River Ridge manages the daily operation of the distribution system, as well as all customer interactions. The water system includes 25 miles of water main, three new supply wells, a two-million gallon per day treatment plant, booster pump station, and a 750,000 gallon storage tank. Together, we are able to provide a high quality reliable water supply, to the current and future customers of River Ridge Commerce Center.

We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. The Charlestown State Park/River Ridge Commerce Center water source is 3 wells located on the banks of the Ohio River in the Charlestown State Park. Located near the wells is a 2 million gallon a day water treatment plant. Water from the water treatment plant is pumped to a booster pump station in the River Ridge Commerce Center, and then distributed throughout the distribution system.

This report shows our water quality and what it means. The data presented is from the most recent testing. If you have any questions about this report or concerning your water utility, please contact **Marc Hildenbrand, 6200 E. Highway 62, Suite 600, Jeffersonville, IN., 47130 (812-285-8979).** We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled River Ridge Commerce Center Board meetings. They are held on **the third Monday of every month. Please call our office to confirm the time.**

The Charlestown State Park/River Ridge Commerce Center water system routinely monitors for constituents in your drinking water according to Federal and State laws. This table shows the results of our monitoring for the period of January 1st to December 31st, 2016. As water travels over the land or underground, it can pick up substances or contaminants such as microbes, inorganic and organic chemicals, and radioactive substances. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It's important to remember that the presence of these constituents does not necessarily pose a health risk.

In this table you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Action Level Goal (ALG) – The level of a contaminant in drinking water below which there is no known or expected risk to health. ALGs allow for a margin of safety.

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

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Non-Detects (ND) - laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l) - one part per million corresponds to one minute in two years or a single penny in $10,000.

Parts per billion (ppb) or Micrograms per liter - one part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

Parts per trillion (ppt) or Nanograms per liter (nanograms/l) - one part per trillion corresponds to one minute in 2,000,000 years, or a single penny in $10,000,000,000.

Parts per quadrillion (ppq) or Picograms per liter (picograms/l) - one part per quadrillion corresponds to one minute in 2,000,000,000 years or one penny in $10,000,000,000,000.

Picocuries per liter (pCi/L) - picocuries per liter is a measure of the radioactivity in water.

Millirems per year (mrem/yr) - measure of radiation absorbed by the body.

Million Fibers per Liter (MFL) - million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.

Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

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

Treatment Technique (TT) - (mandatory language) A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level (MCL) - (mandatory language) The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) - (mandatory language) The "Goal"(MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level (MRDL) – (mandatory language) The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) – (mandatory language) The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Microbiological Contaminants

Contaminant and Unit of Measure	*Date*	*MCL Violation*	*Level Detected*	*Range of Results*	*MCLG*	*Highest Level Allowed*	*Likely Source of Contamination*
Turbidity (NTU)	2016	NA	0 .05	0.03-0.05	NA	TT = 1 NTU	Soil runoff
Turbidity (lowest monthly percent of samples meeting limits)	2016	NA	0.05	0.03-0.05 100% of results meet limits	NA	TT = 95% of samples <0.3 NTU	Soil runoff

Turbidity is a measure of the cloudiness of water. We monitor it because it is a good indicator of water quality and the effectiveness of our filtration system. There are 2 TT triggers and all our data meets both TTs 100%.

Radioactive Contaminants

Contaminant and Unit of Measure	*Date*	*MCL Violation*	*Level Detected*	*Range of Results*	*MCLG*	*Highest Level Allowed*	*Likely Source of Contamination*
Gross Alpha emitters, pCi/L	3/12	N	1.6 pCi/L	NA	0	15	Erosion of natural deposits
Combined Uranium, ug/l	6/12	N	0 .6 ug/l	NA	0	30	Erosion of natural deposits

The state allows us to monitor for some contaminants less than once per year because the concentrations of these comtaminants do not change frequently. Some of our data, though representative, are more than one year old.

Inorganic Contaminants

Contaminant and Unit of Measure	*Date*	*MCL Violation*	*Level Detected*	*Range of Results*	*MCLG*	*Highest Level Allowed*	*Likely Source of Contamination*
Nitrate, ppm	10/16	N	0.80 ppm	NA	10	10	Runoff from fertilizer use, erosion of natural deposits
Fluoride, ppm	2014	N	0.8 ppm	NA	4	4	Erosion of natural deposits
Sodium, ppm	9/14	NA	17 ppm	NA	NA	NA	Runoff from road salt application

Disinfectants and Disinfection By-Products

Contaminant and Unit of Measure	*Date*	*MCL Violation*	*Level Detected*	*Range of Results*	*MCLG*	*Highest Level Allowed*	*Likely Source of Contamination*
Chlorine, ppm	2016	N	1.43 ppm	0.95– 2.14 ppm	4.0	4.0	Water additive used to control microbes
HAA5's (Total haloacetic acids) ppb	9/16	N	3.9 ppb	NA	0	60	By-product of drinking water chlorination
TTHM (Total trihalomethanes) ppb	9/16	N	17.0 ppb	NA	0	80	By-product of drinking water chlorination

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Lead and Copper (Tap)							
Contaminant and Unit of Measure	*Date*	*Exceeds Allowed*	*90% Percentile*	*MCLG*	*No of Sites Exc.AL*	*AL - Action level*	*Likely Source of Contamination*
Copper (ppm)	7/15	Y	0.43 ppm	1.3	1	1.3	Corrosion of plumbing
Lead (ppb)	7/15	Y	8.2 ppb	0	0	15	Corrosion of plumbing

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

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal doctor.

As you can see by the above tables, our system had no violations. We're proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that your water IS SAFE at these levels.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

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

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

All sources of drinking water are subject to potential contamination by substances that are naturally occurring or man made. These substances can be microbes, inorganic or organic chemicals and radioactive substances. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

In our continuing efforts to maintain a safe and dependable water supply it may be necessary to make improvements in your water system. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements.

Thank you for allowing us to continue providing you with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for understanding.

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

Please call our office if you have questions about this report. Marc Hildenbrand can be reached at 812-285-8979 during regular business hours. Or you can join us at a River Ridge Commerce Center Board Meeting, which are held the third Monday of every month. We encourage you to post this information in an easily seen location, or distribute it to your tenants, employees, etc.

000191

Attachment WAS-8R

October 2017 Monthly Report of Operation for DNR Plant

MONTHLY REPORT OF OPERATION
WATER TREATMENT PLANT

Report for **River Ridge Water Treatment Plant** (Water Works Name) for the Month of **October , 2017**

I.D.E.M. Field Rep. **Karla Goodman**

Signed: [signature] Title **Operator In Responsible Charge**

Public Water Supply I.D. No. **5210018** Certification Number **WT110028**

"I certify under penalty of law by this signature that this document was prepared by me or under my direction and the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am also aware that there are significant penalties for submitting false information."

PHYSICAL AND CHEMICAL DATA *

Date	Turbidity		Alkalinity		pH		Hardness		Iron		Manganese		BPS Free	Fluoride
	Raw	Finished	Raw	Finished	Raw	Finished	Raw	Finished	Raw	Finished	Raw	Finished	Chlorine	Finished
1													1.37	
2		0.03				7.69							1.23	0.78
3													1.34	
4		0.03				7.73							1.34	0.79
5													1.40	
6		0.03				7.73							1.33	0.62
7													1.43	
8		0.03				7.65							1.33	0.84
9		0.03				7.67							1.44	0.90
10													1.44	
11		0.03				7.66							1.33	0.66
12													1.36	
13		0.03				7.69							1.22	0.78
14													1.59	
15													1.48	
16		0.04	212	166		7.71	256	246	0.03	0.01	0.127	0.017	1.37	0.67
17													1.25	
18		0.03				7.66							1.30	0.65
19													1.14	
20		0.03				7.70							1.33	0.69
21													1.38	
22													1.38	
23		0.03				7.63							1.28	0.76
24													1.23	
25		0.03				7.63							1.24	0.49
26													1.29	
27													1.24	
28		0.02				7,72							1.35	0.81
29													1.23	
30													1.23	
31		0.02				7.80							1.22	0.65

* All parameters are to be expressed in mg/l except pH and turbidity

Date	W... Treated	Chemicals Used								Filters		Chlorine Residual				Remarks	
												Plant Tap		D.S.			
	1000 gallons	Tons-Salt	Regen.	Lime	Soda Ash	Carbon	Chlorine Gal.	Fluoride Gals.	Phosphate Oz..	Filter Run *(hours)*	Gallons per wash X1000	Free	Total	Free	Total		
1	0						0.3			384				1.46	1.58		
2	718						14.7	45	5.9	401		1.48	1.71	0.73	0.77		
3	50						1.7		0.7	402		1.59		1.57	1.68		
4	871						18.1		7.2	423		1.55	1.76	1.65	1.71		
5	645						14.9		6.0	438		1.54		0.87	0.96		
6	548						10.9	76	4.4	451		1.43	1.62	1.29	1.34		
7	311						8.1		3.2	459		1.75		1.09	1.12		
8	264						5.4	56	2.2	465		1.33	1.48	0.99	1.04		
9	406						10.8	24	4.3	475		1.46	1.61	1.20	1.28		
10	0									475				1.24	1.34		
11	356						7.5	5	3.0	483		1.48	1.62	0.78	0.82		
12	148						3.9		1.6	486		1.95		1.23	1.29		
13	209						3.5		1.4	492		1.41	1.47	0.93	1.14		
14	247						5.4		2.2	498		1.84		1.28	1.38		
15	0									498				1.38	1.44		
16	435						7.9	42	3.2	10	28	1.12	1.24	1.56	1.73		
17	0									10				0.93	0.95		
18	234						3.9	12	1.6	15.9		1.37	1.49	1.38	1.40		
19	326						6.9		2.8	24		1.79		1.08	1.20		
20	274						4.8	21	1.9	30		1.79	1.81	0.91	0.99		
21	139						3.2		1.3	34		1.82		1.31	1.36	Monthly Water Treatment	
22	0									34				1.38	1.46	Total Gallons	8.180 MG
23	414						7.7	15	3.1	44		1.10	1.27	1.23	1.25	Max. Day	0.871 MG
24	48						1.9		0.8	45		1.77		1.11	1.27	Min. Day	0 MG
25	410						7.0	18	2.8	55		1.81	1.84	1.22	1.25	Avg. Daily	0.264 MG
26	62						1.8		0.7	56		1.78		1.16	1.23		
27	204						3.1		1.2	61		1.61		0.84	0.86		
28	284						6.4	36	2.6	68		2.16	2.14	1.34	1.39		
29	0						0		0	68				0.98	1.17		
30	0						0		0	68				0.76	0.80		
31	577						11.9	9	4.8	82		1.76	1.79	0.82	0.89		

Mail To:
Department of Environmental Management
Drinking Water Branch –MC 66-34
N. Senate Ave.
Indianapolis, IN 46204-2551227

0001941

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

JOINT PETITION OF INDIANA-AMERICAN WATER COMPANY, INC. ("INDIANA AMERICAN") AND THE CITY OF CHARLESTOWN, INDIANA ("CHARLESTOWN") FOR APPROVAL AND AUTHORIZATION OF: (A) THE ACQUISITION BY INDIANA-AMERICAN OF CHARLESTOWN'S WATER UTILITY PROPERTIES (THE "CHARLESTOWN WATER SYSTEM") IN CLARK COUNTY, INDIANA IN ACCORDANCE WITH A PURCHASE AGREEMENT THEREFOR; (B) APPROVAL OF ACCOUNTING AND RATE BASE TREATMENT; (C) APPLICATION OF INDIANA AMERICAN'S AREA ONE RATES AND CHARGES TO WATER SERVICE RENDERED BY INDIANA AMERICAN IN THE AREA SERVED BY THE CHARLESTOWN WATER SYSTEM ("THE CHARLESTOWN AREA"); (D) APPLICATION OF INDIANA AMERICAN'S DEPRECIATION ACCRUAL RATES TO SUCH ACQUIRED PROPERTIES; (E) THE SUBJECTION OF THE ACQUIRED PROPERTIES TO THE LIEN OF INDIANA AMERICAN'S MORTGAGE INDENTURE AND THE POTENTIAL ENCUMBRANCE FROM RIGHT OF FIRST REFUSAL; AND (F) THE PLAN FOR REASONABLE AND PRUDENT IMPROVEMENTS TO PROVIDE ADEQUATE, EFFICIENT, SAFE AND REASONABLE SERVICE TO CUSTOMERS OF THE CHARLESTOWN WATER SYSTEM.	)	**CAUSE NO. 44976**

OBJECTIONS AND RESPONSES OF THE CITY OF CHARLESTOWN, INDIANA, TO INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR'S 3rd DATA REQUESTS TO JOINT PETITIONERS INDIANA-AMERICAN WATER COMPANY AND THE CITY OF CHARLESTOWN, INDIANA

The City of Charlestown, Indiana ("City"), pursuant to Ind. Tr. R. 26(B), by its counsel, hereby submits the following objections and responses to Indiana Office of Utility Consumer

Counselor's 3rd Set of Data Requests to Joint Petitioners Indiana-American Water Company and the City of Charlestown, Indiana (the "Data Requests").

GENERAL OBJECTIONS

1. The City objects to the Data Requests on the basis of the attorney-client privilege, the work-product doctrine, and any public records exemptions, to the extent the Data Requests seek disclosure of documents constituting, evidencing or reflecting confidential communication between the City and attorneys or documents that are otherwise protected from disclosure by the attorney-client privilege, the work-product doctrine, or public records exemptions. Several of the Data Requests are so broadly worded that they could be construed to call for the production of privileged documents created or obtained after the present matter was initiated. To prepare a privilege log for all such privileged documents would be unduly burdensome to the City given the nature of this matter.

2. The City objects to the Data Requests to the extent the Data Requests seek the disclosure of confidential, proprietary, competitively sensitive and/or trade secret information. The City has made reasonable efforts to maintain the secrecy of this information and such information derives independent economic value from not being generally known to nor readily ascertainable by proper means by others who can obtain economic value from its disclosure or use.

3. The City objects to the Data Requests to the extent the Data Requests are overly broad in terms of time and/or scope in that the Data Requests seek documents or information which are neither relevant nor material to the subject matter of this Cause and which are not reasonably calculated to lead to the discovery of admissible evidence. The City further objects to the Data Requests to the extent that they are phrased in absolute terms. If a Data Request asks for all information or documents on a particular subject, the City, in responding to such Data Request, will undertake only to supply information or documents known to it at the time of the response or located after a reasonably diligent search, and will not undertake any obligation, express or implied, to represent that the response includes all of the information or all of the documents that may possibly exist.

4. The City objects to the Data Requests to the extent the Data Requests seek information outside the scope of this proceeding, and as such, the Data Requests seek information not reasonably calculated to lead to the discovery of admissible evidence.

5. The City objects to the Data Requests to the extent the Data Requests seek information that is irrelevant to this proceeding and that is not calculated to lead to the discovery of admissible evidence.

6. The City objects to the Data Requests to the extent the Data Requests are vague, ambiguous or unduly burdensome and provide no basis on which the City can determine what information is sought.

7. The City objects to the Data Requests on the grounds and to the extent the Data Requests attempt or purport to impose upon the City any obligation to respond to the Data

Requests beyond those requirements imposed by the Indiana Rules of Trial Procedure or to supplement these responses except to the extent required by Indiana Trial Rule 26(E). The City will not be bound by definitions or instructions that are inconsistent with the normal and customary usage or words in the Indiana Rules of Trial Procedure, and will respond to the Data Requests utilizing the common usage of the words and terms employed.

8. The City further objects to the Data Requests on the grounds and to the extent the Data Requests seek the name(s) of the person(s) responsible for preparing the responses and concerning all documents produced as part of the responses. *United States v. National Steel Corp.*, 18 F.R.D. 599, 600 (S.D. Tex. 1960); *Hopkins Theatre, Inc. v. RKO Radio Pictures, Inc.*, 18 F.R.D. 379, 383 (S.D.N.Y. 1956); *Maple Drive-In Theatre Corp. v. Radio-Keith-Orpheum Corp.*, 23 Fed. R. Serv. 33.321, case 2 (S.D.N.Y. 1956).

9. The City further objects to the Data Requests because they do not contain a provision for the return of privileged or attorney work-product documents inadvertently produced. Inadvertent production by the City of any documents that contain information that is confidential, privileged, was prepared in anticipation of litigation, or is otherwise immune from discovery, shall not constitute a waiver of any privilege or of any ground for objection to discovery with respect to such documents, or the subject matter thereof or the information contained therein, or of the City's right to object to use of any such document or information during any subsequent proceeding in this action.

10. Subject to and without waiver of the foregoing objections, the following Responses constitute the corporate responses of the City and contain information gathered from a variety of sources. The City objects to the Data Requests to the extent they request identification of and personal information about all persons who participated in responding to each Data Request on the grounds that it is overbroad, unreasonably burdensome, and irrelevant given the nature and scope of the Data Requests and the many people who may be consulted about them. The City further objects to the Data Requests to the extent they purport to require identification of a witness who can answer questions regarding the substance of or origination of information supplied in each response on the ground that the City has no obligation to call witnesses to testify as to information provided in discovery.

Without waiving these objections, the City responds to the Data Requests in the manner set forth below.

OUCC DATA REQUEST #3

Indiana-American Water Company, Inc.
and
City of Charlestown

Cause No 44976

September 18, 2017

Q 3.1. Please provide all written communications, including email messages, between the City of Charlestown and Clark Dietz, Inc., Banning Engineering, P.C., and/or Mills, Biggs, Haire & Reisert, Inc. (collectively, the "appraisers") discussing individually or collectively the appraisers' scope of work to value the City of Charlestown's water utility facilities.

Objection: The City objects to the Data Request on the basis of the foregoing general objections. The City objects to the Data Request on the basis that the Data Request seeks information not in the possession of the City and not within the personal knowledge of the City.

Response: Please see: Attachment (OUCC) 3.1; Joint Petitioners' Exhibit 1, Attachment GRH-2, pages GRH-005, -040, -062 to -063, -087, and -108 to -109; and Attachment (NOW) 1.8.a, pages with Bates numbers ending with -00511 to -00592 provided in response to NOW!, Inc.'s 1st set of data requests, which is an attachment to one of the emails produced in Attachment (OUCC) 3.1.

Q 3.2. Please provide all written communications, including email messages, between Indiana-American Company, Inc., and Clark Dietz, Inc., Banning Engineering, P.C., and Mills, Biggs, Haire & Reisert, Inc. (collectively, the "appraisers") discussing individually or collectively the appraisers' scope of work to value the City of Charlestown's water utility facilities.

Response: Indiana-American Water Company, Inc., is responding to this request.