STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF THE CITY OF EVANSVILLE, INDIANA, FOR AUTHORITY TO ISSUE BONDS, NOTES, OR OTHER OBLIGATIONS, FOR AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR WATER SERVICE, AND FOR APPROVAL OF NEW SCHEDULES OF WATER RATES AND CHARGES	)	**CAUSE NO. 45073**

OUCC PREFILED TESTIMONY

OF

EDWARD R. KAUFMAN, CRRA – PUBLIC'S EXHIBIT NO. 5

ON BEHALF OF THE

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

JULY 20, 2018

Respectfully Submitted,

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

Daniel M. Le Vay, Atty. No.22184-49
Deputy Consumer Counselor

CERTIFICATE OF SERVICE

This is to certify that a copy of the foregoing ***Office of Utility Consumer Counselor Prefiled Testimony Edward R. Kaufman, CRRA*** has been served upon the following counsel of record in the captioned proceeding by electronic service on July 20, 2018.

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TESTIMONY OF OUCC WITNESS EDWARD R. KAUFMAN, CRRA
CAUSE NO. 45073
CITY OF EVANSVILLE

I. INTRODUCTION

Q: Please state your name and business address.

A: My name is Edward R. Kaufman, and my business address is 115 W. Washington St., Suite 1500 South, Indianapolis, IN 46204

Q: By whom are you employed and in what capacity?

A: I am employed by the Indiana Office of Utility Consumer Counselor ("OUCC") as the Assistant Director with the Water-Wastewater Division. My qualifications and experience are set forth in Appendix A.

Q: What is the purpose of your testimony?

A: I discuss the City of Evansville's ("Petitioner" or "Evansville") request for authority to issue $147,355,000 of long term debt. My testimony explains that because Petitioner has not determined the amount and timing of its open market and SRF loans, it is difficult to assess the reasonableness of Petitioner's request. In general, Petitioner's plan to issue long-term debt to fund capital projects is reasonable. However, due to several factors discussed below as well as by OUCC witness James Parks, Evansville's borrowing authority should be set at a lower amount of approximately $117,355,000. In addition, I recommend the Commission approve certain adjustments and reporting requirements. I also recommend placing restrictions on Petitioner's debt service reserve that should be implemented to ensure the funds are available as needed.

Q: Do you have schedules and attachments?

A: Yes. Appendix B lists of my schedules and attachments.

II. PETITIONER'S DEBT ISSUANCE(S)

A. Introduction

Q: Please describe Petitioner's proposed debt issuance as set forth in its case.

A: Petitioner proposes to borrow $147.355 million for specified capital projects. On page 6 of his testimony, Mr. Baldessari explains, Evansville anticipates issuing its proposed bonds in one or more series on the open market or through the Indiana Finance Authority's ("IFA") Drinking Water State Revolving Fund ("SRF"). On page 7, Mr. Baldessari further clarifies that over the next several months the Petitioner will be determining the amount and timing of the open market and SRF bond issues.

The annual debt service on Petitioner's new debt, as proposed, would be $4,355,836 (Phase I), $8,543,712 (Phase II) and $10,551,613 (Phase III). Combined with Petitioner's existing debt service, total annual debt service would be $14,489,736 (Phase I), $18,676,213 (Phase II) and $20,685,808 (Phase III). (Petitioner's proposed annual debt service calculations are shown at Adjustment 5 on page 28 of Petitioner's Accounting Report.)

Q: Does the OUCC accept Petitioner's proposed borrowing?

A: No. First, the timing, the number and the amounts of Petitioner's debt issuances are not clearly set forth in Petitioner's case-in-chief. Petitioner's testimony indicates it anticipates issuing bonds in one or more series on the open market or through the SRF, but Petitioner's proposed amortization schedule, its estimated

annual debt service and its revenue requirements are based on a single (open market) issuance. If Petitioner issues its debt in multiple series (and with multiple issuers) the amount and timing of its proposed debt and annual debt service will be materially different than that indicated in its case in chief. For example, if Petitioner issues its proposed debt through multiple issuances, at least in the short run, its revenue requirements will include principal and interest expenses that it is not actually incurring. Thus, Petitioner's rates will be set based on revenue requirements that are overstated.

Moreover, as discussed by OUCC witness James Parks, the estimated costs of several of Petitioner's proposed projects are overstated. For instance, Mr. Parks explains the Petitioner's estimated project costs also includes an overstated 9.6% mark-up for "Construction Engineer / Resident Project Represented Costs."

Mr. Parks also explains some of the projects may not be completed in the time frame that Petitioner proposes. Additionally, some of Petitioner's proposed projects are identified as being funded through E&R, but are also listed on Evansville's SRF loan application. Moreover, while not explained by Petitioner in its testimony, Evansville has marked-up for estimated inflation the project amounts used to determine Petitioner's proposed borrowing authority.

Q: Why is it important to accurately estimate annual debt service costs as a component of a municipal utility's revenue requirements?

A: An accurate and reasonable estimate of annual debt service costs balances the needs of the utility with the interests of ratepayers. A utility needs revenues sufficient to meet its real debt service requirements, while ratepayers are entitled to rates that do not exceed actual debt service requirements.

Q: Why is it important for the number, timing and amount of debt issuances to be known and understood?

A: Achieving the goal of setting accurate debt service amounts can be difficult even under typical circumstances. The process requires the Commission to issue a final order granting authority and increasing rates before any debt is issued, but the Commission will typically not know the precise interest until after the debt has been issued. However, when Petitioner's rates are increased before the debt has been issued, it will collect funds in rates without a corresponding expense. Rates should be based on the utility's actual expenses. Petitioner's rates should not be based on a hypothetical single bond issuance. Multiple debt issuances make over-collection more likely.

B. Multiple Debt Issuances

Q: In its case-in-chief, Petitioner estimated its debt service revenue requirement based on a single open-market issuance. Will Petitioner offer a single open-market debt issuance?

A: Most likely, no. On April 25th the City of Evansville filed and application form with the SRF. The City also filed a Preliminary Engineering Report ("PER") with the SRF on June 16. A copy of this report was provided to the OUCC through informal discovery and the "Summary of Projects" is included as Attachment ERK-5). Based on its responses to OUCC discovery and conversations I had with Shelley Love of the SRF, Petitioner appears to be moving forward with at least one SRF loan and an open market loan.

In OUCC DR 4-7 the OUCC asked whether Petitioner anticipated issuing bonds in more than one offering. The OUCC also asked for information about the issuances including when issuances would be made, who would be loaning the

money, amortization schedules, and how much would be borrowed. Petitioner responded by acknowledging there would be at least two bond issues:

> A: It is anticipated that there will be at least two bond issues; one open market bond issue and one SRF bond issue. The SRF program may want a bond issue in each year of the three (3) year rate proceeding. The funding source, timing, terms and amounts of each bond issuance are not fully known at this time. Management and its consulting engineers are currently determining the projects which will be funded through the SRF program and those which will be funded with an open market bond issue. As the financing plan for the projects, which will be funded through the SRF and the open market bond issues, are determined, we will supplement this response.
>
> The Petitioner has filed an application with SRF as of June 15, 2018. SRF has indicated that there will be sufficient funds available to finance those projects the City determines are best suited to go through the SRF program. Conversations regarding the amounts and timing of the SRF issues will occur over the next several months.

Q: Does the application to SRF indicate multiple borrowings?

A: Yes. In response to an informal discovery request, Petitioner provided the OUCC with a copy of the DW Preliminary Engineering Report (PER) – A,[1] which had been submitted to SRF. The cover letter included with the PER includes the following statement:

> A portion of the funds being requested by DW PER – A would be closed as part of a Fall 2018 SRF loan closing. Any projects not closed on in [sic] will be part of future loan closings in 2019 and 2020. (Emphasis added)

[1] Attachment ERK- 5.

Thus, it appears Evansville will use multiple borrowers and multiple debt issuances to finance its proposed capital projects.

Q: In its response to OUCC DR 4-7, Petitioner indicated: "As the financing plan for the projects, which will be funded through the SRF and the open market bond issues, are determined, we will supplement this response." As of the preparation of your testimony, has Petitioner supplemented its response?

A: No. As of the date the OUCC filed this testimony, Petitioner had not supplemented its response. Accordingly, Petitioner would appear not to have made progress on completing its plans to finance its anticipated projects. If Petitioner has not determined its financing plan, it is not possible for the OUCC or the Commission to evaluate Petitioner's undeveloped financing proposal. Petitioner's financing plans are integral to its revenue requirements and a complete financing plans should have been part of the record. Moreover, Petitioner's assertion that it will revise its financing plan by supplementing its responses to OUCC discovery, is not a sufficient remedy to address deficiencies in its rate case.

Q: Has Petitioner provided enough information to properly calculate its annual debt service?

A: No. While Petitioner intends to issue debt from multiple issuers and in multiple issuances, it has not provided amortization schedules that reflect the estimated annual debt service expense it will incur. Without amortization schedules that reflect Petitioner's intended debt issuances, Petitioner's annual debt service cannot be reasonably calculated.

Q: Can the actual revenue requirement be achieved through a true-up?

A: No. There are two problems with that approach. First, initial rates will be based on incomplete and inaccurate information. Secondly, the actual financing request

cannot be adequately evaluated. True-ups are best suited for relatively small changes, which are out of the control of a utility. A utility typically will not know the exact interest rate until very shortly before the closing on the debt issuance. It makes sense to true-up debt service because the final actual interest rate cannot be known and must be estimated in Petitioner's rate filing. But in such a case, the utility, the consumer parties, and the Commission will have a very good understanding of the amount that needs to be borrowed and what the interest rate will be so that appropriate initial rates can be set and the terms of the borrowing can be evaluated. It is neither necessary nor appropriate to base rates on a vague, incorrect or incomplete financing plan, with the intent that everything can be revised in a true-up.

Q: Why is it a problem for initial rates to be based on incomplete information?

A: During the time period rates are in place and before the true-up is implemented, a utility will either over-collect or under-collect. When the rates are based on one issuance but the number, timing and amount of debt issuances is unknown, the over collection or under collection could be material. This is especially true if a utility breaks a proposed debt issuance into multiple issuances. For example, if a utility broke up a $90 million issuance into three $30 million issuances, where each issuance was one year apart, the annual debt service on the combined loans will be spread out and result in a lower initial debt service. Rates should not include the debt service expenses of a single debt issuance, when the debt is issued over several years. A utility should use its best efforts to accurately estimate its anticipated cost of debt service. Thus, minimizing the need and scope of the true-up. Based on the

information provided through discovery, it clear that the annual debt service included in Petitioner's proposed revenue requirements will be materially different than its actual debt service.

Finally, the OUCC and the Commission should have an opportunity to evaluate a utility's financing plan as it will take place. Petitioner now asserts it will have an open market issuance and multiple SRF issuances. The OUCC and Commission should be permitted to evaluate Petitioner's actual financing plan. Petitioner's revenue requirements should not be authorized based on a hypothetical plan that will not reflect actual costs.

Q: What should be done in this case to address the lack of information provided?

A: One solution would be to defer the debt service portion of this case until Petitioner can provide amortization schedules that reflect both the timing and amounts of its open-market and SRF debt issuances. Thus, the initial order in this rate case would incorporate all changes to Petitioner's revenue requirements except it would not include in rates funds for debt service on future issuances. In the alternative, rates should be based on an estimate that incorporates multiple SRF issuances as well as an open market debt issuance. In other words, rates should be based on an estimate of the actual debt issuances that should be expected.

Q: Please explain how you estimated a debt service for Petitioner.

A: Based on my analysis and the testimony of OUCC witness James Parks, I have reduced Petitioner's proposed financing authority by $30,000,000 to $117,355,000. This reduction addresses Petitioner's overstated project costs, unsupported inflation adjustment, unsupported mark-ups, and unsupported "unknown relocation

projects." This reduction also reflects, Petitioner's ability (or inability) to complete all of the projects included in its testimony. This estimate is intended to reflect the totality of our concerns, that Petitioner's proposed borrowing authority overstates its projects costs and includes more projects than Petitioner will be able to complete over the three-year time period (2019-2021). This estimate also recognizes that Petitioner will issue debt from both the SRF and through the open market.

For my estimation of debt service, I anticipate that the Evansville borrows $85,000,000[2] from the SRF, on Jan 1, 2019. My analysis assumes an interest rate of 2.5%. I also assume Evansville borrows $32,355,000 through an open market issuance on December 19, 2019 at its stated interest rates. (SRF debt is not issued all at once. Instead funds are loaned out by SRF as they are expended by the utility.) In my analysis I anticipate a two year construction cycle and that Evansville draws its funds equally over the next two years (starting on January 1, 2019). Thus, Evansville spends one fourth of its SRF debt issuance, $21,250,000, every six months. Schedule ERK - 1, is an amortization schedule for an open market debt issuance of $32,355,000. Schedule ERK - 2, is an amortization schedule for $85,000,000 in SRF debt. SRF debt is a draw and borrowers are charged interest on the outstanding balance. My amortization schedule assumes that Petitioner would draw down $21,250,000 every six months.

Schedule ERK-3 combines the annual debt service payments of the SRF and open market loans. Using my amortization schedules, Petitioner would have a

[2] Per DW Preliminary Engineering Report (PER) – A, page SOP-7 (Attachment ERK - 5).

debt service payment of $1,667,736 in 2019, $5,403,575 in 2020 and $7,691,575 in 2021.[3] My amortization schedules show payments are made on the January 1st of each year. Payments made on January 1st, must be collected during the prior year. My estimated amortization schedules reflect that Petitioner would pay $1,667,736 on January 1, 2020. Thus, the revenues to make this payment will be collected in 2019 and are included in the column titled Phase 1 (2019) on Schedule ERK 3.

Q: Why did you anticipate an SRF loan of $85.0 million in your calculation?

A: Page SOP-8 of the summary of "DW Preliminary Engineering Report (PER) – A" estimates a "Total Project Cost" of approximately $85 million. The balance of the OUCC's proposed debt authority of $32,355,000 ($117,355,000 - $85,000,000) would be raised through an open market issuance.

C. Project Costs

Q: Please explain your concerns about Petitioner's proposed project costs?

A: Petitioner appears to have adjusted the cost of its proposed projects, proposed borrowing authority and subsequent annual debt service for inflation. The column titled "Estimated total Project Cost in Contraction Year" of the HNTB Report (Attachment ERK – 6) matches the estimated cost figures from Petitioner's Attachment DLB 1, pages 7-9. The HNTB Report also includes a column titled "Estimated Project Cost (2017 dollars)." The difference between these two columns appears to account for estimated inflation. For example, the first line of the HNTB report for the Project titled "President's Neighborhood Central" shows

[3] The 2021 annual debt service is based on a five year average 2021-2025.

an "Estimated Total Project Cost (2017 dollars) of $3,575,900, while the column titled "Estimated Total Project Cost in Contraction Year" of $3,905,300. Thus, it appears the report has increased the estimated project costs for 2019 projects by approximately 9.3% (or 4.5% per year, compounded over two years). Petitioner does not explain the basis for adding inflation, the amount of inflation included or even that its proposed borrowing authority includes inflation. A review of the bottom line from page 1 of Attachment ERK - 6 indicates that almost $12 million ($105,133,500 - $93,519,500) of Petitioner's proposed project costs is to account for estimated inflation. Petitioner's unsupported adjustment for inflation is one reason why the OUCC believes that Petitioner has overstated its estimated project costs.

D. Project Timing

Q: Does the timing of projects that Petitioner includes in Attachment DLB-1, page 7 (Proposed Capital Improvements 2019 – 2021) match the timing of projects indicated in Petitioner's loan application to the SRF?

A Not entirely. For instance, Petitioner's proposed capital improvement plan for 2019-2021 lists the "Franklin Ave and Illinois East of Pig[e]on Creek" project in 2019 ($1,406,800), yet Evansville's application to the SRF lists project 32 "Franklin Ave and Illinois east of Pigeon Creek" with a construction year of 2022. Petitioner's proposed capital improvement plan for 2019-2021 also lists the Schutte Road, Broadway to USI Tank ($2,335,100) as being constructed in 2021, while Evansville's loan application to the SRF lists Project 27 "Broadway, Phase II and II, Schutte Road, Broadway to USI Tank as being constructed in 2022. Projects

scheduled to be completed in 2022 (per Petitioner's SRF loan application) should not be included in borrowing authority for Petitioner's 2019-2021 capital plan.

E. Adjustments to E&R

Q: Do you make any adjustments to Petitioner's proposed E&R?

A: Yes. According to Petitioner's (Proposed Capital Improvements 2019 – 2021) Attachment DLB-1, page 7, Petitioner proposes to fund its "New Harmony Road, Allens Lane to Harmony Way of $1,061,800 through E&R. However, page 7 of Evansville's loan application (Attachment ERK - 4), project 7, appears to include the "New Harmony Road, Allens Lane to Harmony Way" in its SRF proposed debt issuance. This project should not be included in both the debt issuance and in E&R. I propose the project be excluded from Petitioner's E&R revenue requirement. The same duplication appears with respect to the "Schmitt Lane, east of Oak Hill" ($513,300) project (project 19). I also propose this project be excluded from Petitioner's E&R revenue requirement.

F. Interest Earned

Q: Will Petitioner be able to earn interest on its open market debt?

A: Petitioner's open market debt will be issued all at once, but it will likely be spent over 18-36 months. Thus, it is reasonable to expect Petitioner will earn interest on the unspent balance of its open market debt funds while it is completing it proposed projects. According to the U.S. Department of Treasury, as of July 13, 2018, the interest rate on 1 month Treasury securities was 1.87% (Attachment ERK – 7). Assuming Petitioner earns an interest rate of 1.5% per year (0.125% per month) and Petitioner spends the open market debt funds evenly over 24 months, Petitioner

would earn $374,105 in 2019 and $131,442 in 2020 (Schedule ERK – 4, page 1 of 2). Interest earned on Petitioner's unspent open market debt issuance should be recognized as an offset to Petitioner's revenue requirements.

Note: The earned interest figures I provided above and used as an offset to Petitioner's revenue requirements is based on the OUCC's proposed level of open market debt of $32,355,000. If Petitioner borrows its proposed $147,700,000 through an open market loan, spent the funds over 24 months and earned annual interest of 1.5%, their interest earned would be $1,707,871 in 2019 and $600,031 in 2020 (Schedule ERK – 4, page 2 of 2).)

G. Interest Rates

Q: Does your amortization schedule for the proposed open market debt use the same interest rates that Petitioner used in its analysis?

A: Yes. While I believe the interest rates used by Petitioner may be overstated, I used the same interest rates to estimate debt service for the open market loan.[4]

III. DEBT TIMING

Q: Will there be a gap between the time Petitioner receives an order in this Cause and when it issues its proposed debt?

A: Yes.

Q: When would this gap become a material concern?

A: The gap in timing becomes a concern if Petitioner does not issue its proposed debt within two months after it has filed a revised tariff with the Commission in this Cause. Petitioner should reserve any funds collected in rates for its 2018 debt

[4] Attachment ERK 1 is a copy of the Municipal Yield curve from Municipal Market Monitor (TM3) from 7/08/2018. For "A" rated municipal bonds the attachment shows interest rates ranging from 1.69% (1 year) to 3.39% (30 year).

issuances. In the event Petitioner does not or cannot issue its debt within two months of a final order in this Cause, Petitioner should use those funds to offset the amount it needs to borrow. For example, if a utility issues its proposed debt four months after the final order in its Cause, over which period it collected $25,000 per month for its proposed debt, then it should use the $100,000 (4 * $25,000) it collected to reduce the amount of debt that is issued. This mechanism is a means to match revenues collected for Petitioner's proposed 2018 bonds with its actual expense for its 2018 bonds.

IV. TRUE-UP AND OTHER ISSUES

Q: Should Petitioner be required to true-up its proposed annual debt service once the interest rates on its proposed debt are known?

A: Yes. The precise interest rates and annual debt service will not be known until Petitioner's debt is issued; therefore, Petitioner's rates should be trued-up to reflect the actual cost of the debt. I recommend the Commission require Petitioner to file a report within thirty (30) days of closing on any of its long term debt issuances explaining the terms of the new loan, the amount of debt service reserve and an itemized account of all issuance costs. The report should include a revised tariff, amortization schedule and also calculate the rate impact in a manner similar to the OUCC's schedules.

Q: How should disputes regarding Petitioner's true up report be identified?

A: The OUCC should have fourteen (14) days to challenge Petitioner's proposed true-up. Petitioner should similarly have fourteen (14) days to file a response to the OUCC if it has challenged Petitioner's calculation. Thereafter, the Commission should resolve the issue through a process it considers appropriate.

Q: Should there be any exceptions to your proposed process?

A: Yes. If both parties agree in writing that the increase or decrease would be immaterial, the true-up should not be implemented.

Q: What other conditions should be placed on Petitioner's proposed debt issuance?

A: Unused financing authority should not continue indefinitely. Typically, I would recommend that if a Petitioner issues its debt for less than the amount authorized by the Commission, any unused authority expires and cannot be used at a later date. But if Petitioner is going to issue debt in phases over multiple years, its financing authority should remain over a specified time period. Based on the information provided in this case, I believe it is reasonable that unused financing authority should not expire until December 31, 2021.

V. DEBT SERVICE RESERVE

Q: Should there be any restrictions on Petitioner's proposed debt service reserve?

A: Yes. If Petitioner spends any funds from its debt service reserve for any reason other than to make the last payment on its current or proposed debt issuance(s), Petitioner should be required to provide a report to the Commission and the OUCC within five (5) business days of said transaction. The report should state how much Petitioner spent from its debt service reserve, explain why it spent funds from its debt service reserve, provide a cite to any applicable loan documents that allow it to spend funds from its debt service reserve, describe its plans to replenish its debt service reserve, and explain any cost-cutting activities it has implemented to forestall spending funds from its debt service reserve.

VI. SUMMARY

Q: Please summarize your concerns regarding Petitioner's proposed debt issuance.

A: Petitioner's proposed debt issuance and revenue requirements do not represent its actual financing plans. Petitioner intends to borrow funds through both the SRF and through an open market issuance. Petitioner also intends to issue debt in multiple phases. But Petitioner's rate case revenue requirements are based on a single open market debt issuance of $147.7 million. Based on its responses to OUCC discovery, Petitioner has not determined when and how much debt it will actually issue. Additionally, Petitioner's estimates of the costs of many of its proposed projects are overstated Further complicating matters is that Petitioner does not have a history of completing projects at the pace it has proposed to justify its barrowing in this case. Petitioner should not burden ratepayers with debt service for projects it is unlikely to complete during the life of these rates.

VII. OUCC RECOMMENDATIONS

Q: Please state your recommendations.

A: As soon as practicable, Petitioner should provide amortization schedules that reflect the amounts, timing and lender of its anticipated debt issuances. The debt issuances should be based on a viable schedule that is within Petitioner's ability to complete. Additionally, I recommend the following:

1) Absent revised amortization schedules, I recommend the Commission authorize Petitioner to issue no more than $117,355,000 in long-term at a maximum interest rate of 5.0%

2) I recommend the Commission include the following in its findings:

A. If Petitioner does not issue its proposed debt within two (2) months after it has filed a revised tariff with the Commission, it should temporarily reserve the funds collected in rates for its 2017 debt and use those funds to offset the amount it borrows.

B. Within thirty (30) days of closing on its long term debt issuance, Petitioner shall file a report with the Commission and serve a copy on the OUCC, explaining the terms of the new loan, including an amortization schedule, the amount of debt service reserve and all issuance costs. The report should include a revised tariff and also calculate the rate impact in a manner similar to the OUCC's schedules. Petitioner's rates should be trued-up if necessary to match its actual cost of debt service.

C. If Petitioner spends any of the funds from its debt service reserves for any reason other than to make the last payment on its proposed 2018 debt issuance, Petitioner shall provide a report (as described above) to the Commission and the OUCC within five (5) business days.

Q: Does this conclude your testimony?

A: Yes.

VIII. APPENDIX A

QUALIFICATIONS

Q: Please describe your educational background and experience.

A: I graduated from Bentley College in Waltham, Massachusetts with a Bachelors degree in Economics/Finance and an Associates degree in Accounting. Before attending graduate school, I worked as an escheatable property accountant at State Street Bank and Trust Company in Boston, Massachusetts. I was awarded a graduate fellowship to attend Purdue University where I earned a Masters of Science degree in Management with a concentration in finance.

I was hired as a Utility Analyst in the Economics and Finance Division of the OUCC in October 1990. My primary areas of responsibility have been in utility finance, utility cost of capital, and regulatory policy. I was promoted to Principal Utility Analyst in August 1993 and to Assistant Chief of Economics and Finance in July 1994. As part of an agency wide reorganization in July 1999, my position was reclassified as Lead Financial Analyst within the Rates/Water/Sewer Division. In October, 2005 I was promoted to Assistant Director of the Water/Wastewater Division. In October 2012, I was promoted to Chief Technical Advisor. I have participated in numerous conferences and seminars regarding utility regulation and financial issues. I was awarded the professional designation of Certified Rate of Return Analyst ("CRRA") by the Society of Utility and Regulatory Financial Analysts ("SURFA"). This designation is awarded based upon experience and the successful completion of a written examination. In April 2012, I was elected to SURFA's Board of Directors. I continue to serve on SURFA's board.

Q: Have you previously testified before the Indiana Utility Regulatory Commission?

A: Yes. I have testified before the Indiana Utility Regulatory Commission ("Commission") in a number of different cases and issues. I have testified in water, wastewater, natural gas, telecommunication and electric utility cases. While my primary areas of responsibility have been in cost of equity, utility financing, fair value, utility valuation and regulatory policy, I have also provided testimony on trackers, guaranteed performance contracts, declining consumption adjustments, and other issues.

Q: Please describe the review and analysis you conducted to prepare your testimony.

A: I reviewed the Petition, testimony, and exhibits filed by Petitioner in this Cause. I participated in conducting discovery, reviewed Petitioner's responses. I discussed Petitioner's proposal to issue debt with Shelley Love and Bill Harkins of the SRF. Finally, I reviewed publications such as "The Municipal Market Monitor" and "Value Line" which provide current interest rates.

IX. APPENDIX B

SCHEDULES AND ATTACHMENTS

Schedule ERK - 1, is an ammonization schedule that calculates the annual debt service on an Open Market loan of 32,355,000.

Schedule ERK - 2, is an ammonization schedule that calculates the annual debt service on an SRF loan of $85,000,000.

Schedule ERK - 3, Calculates the combined annual debt service on the Open Market and SRF loans.

Schedule ERK – 4 Calculates the estimated interest that Petitioner will earn on the unspent funds of its Open Market debt.

Attachment ERK- 1 is a copy of "The Municipal Market Monitor (TM3)" as of July 6th, 2018.

Attachment ERK - 2 is Petitioner's response to OUCC Data Request 2.1 and 2.2

Attachment ERK - 3 is Petitioner's response to OUCC Data Request 4.7, 4.8 and 4.9.

Attachment ERK - 4 is a copy of the City of Evansville's loan application it filed with the SRF on April 25, 2018

Attachment ERK – 5 is a copy of the City of Evansville's cover letter and Preliminary Engineering Report (PER) – A Summary of Projects it provided to the SRF on June 15th, 2018

Attachment ERK - 6 is a five page report prepared by HNTB (dated 12/27/2017) that itemizes the costs of Evansville's capital projects from 2019-2022.

Attachment ERK – 7 sets forth interest rates published by the U.S. Department of Treasury, as of July 13, 2018.

EVANSVILLE (INDIANA) WATERWORKS DISTRICT

SCHEDULE OF AMORTIZATION OF $32,355,000 PRINCIPAL AMOUNT OF
OPEN MARKET WATERWORKS DISTRICT REVENUE BONDS, SERIES 2018A
Principal payable annually January 1st, beginning January I, 2021 and semi-annually on July 1, 2038.
Interest payable semi-annually January 1st and July 1st, beginning July I, 2019.
Assumed issue date December 19, 2018

	Date	Principal Balance	Principal	Interest Rate	Period Interest	Total Interest	Period Total	Fiscal Total
1	7/1/2019					$ 586,573.33	$ 586,573	
2	1/1/2020	$ 32,355,000				$ 549,912.50	$ 549,913	$ 1,136,486
3	7/1/2020					$ 549,912.50	$ 549,913	
4	1/1/2021	$ 32,355,000	$ 1,100,000	2.50%	$ 13,750.00	$ 549,912.50	$ 1,649,913	$ 2,199,825
5	7/1/2021					$ 536,162.50	$ 536,163	
6	1/1/2022	$ 31,255,000	$ 1,150,000	3.00%	$ 17,250.00	$ 536,162.50	$ 1,686,163	$ 2,222,325
7	7/1/2022					$ 518,912.50	$ 518,913	
8	1/1/2023	$ 30,105,000	$ 1,200,000	3.00%	$ 18,000.00	$ 518,912.50	$ 1,718,913	$ 2,237,825
9	7/1/2023					$ 500,912.50	$ 500,913	
10	1/1/2024	$ 28,905,000	$ 1,250,000	3.00%	$ 18,750.00	$ 500,912.50	$ 1,750,913	$ 2,251,825
11	7/1/2024					$ 482,162.50	$ 482,163	
12	1/1/2025	$ 27,655,000	$ 1,300,000	3.00%	$ 19,500.00	$ 482,162.50	$ 1,782,163	$ 2,264,325
13	7/1/2025					$ 462,662.50	$ 462,663	
14	1/1/2026	$ 26,355,000	$ 1,350,000	3.00%	$ 20,250.00	$ 462,662.50	$ 1,812,663	$ 2,275,325
15	7/1/2026					$ 442,412.50	$ 442,413	
16	1/1/2027	$ 25,005,000	$ 1,400,000	3.00%	$ 21,000.00	$ 442,412.50	$ 1,842,413	$ 2,284,825
17	7/1/2027					$ 421,412.50	$ 421,413	
18	1/1/2028	$ 23,605,000	$ 1,450,000	3.00%	$ 21,750.00	$ 421,412.50	$ 1,871,413	$ 2,292,825
19	7/1/2028					$ 399,662.50	$ 399,663	
20	1/1/2029	$ 22,155,000	$ 1,500,000	3.00%	$ 22,500.00	$ 399,662.50	$ 1,899,663	$ 2,299,325
21	7/1/2029					$ 377,162.50	$ 377,163	
22	1/1/2030	$ 20,655,000	$ 1,550,000	3.00%	$ 23,250.00	$ 377,162.50	$ 1,927,163	$ 2,304,325
23	7/1/2030					$ 353,912.50	$ 353,913	
24	1/1/2031	$ 19,105,000	$ 1,600,000	3.50%	$ 28,000.00	$ 353,912.50	$ 1,953,913	$ 2,307,825
25	7/1/2031					$ 325,912.50	$ 325,913	
26	1/1/2032	$ 17,505,000	$ 1,650,000	3.50%	$ 28,875.00	$ 325,912.50	$ 1,975,913	$ 2,301,825
27	7/1/2032					$ 297,037.50	$ 297,038	
28	1/1/2033	$ 15,855,000	$ 1,750,000	3.50%	$ 30,625.00	$ 297,037.50	$ 2,047,038	$ 2,344,075
29	7/1/2033					$ 266,412.50	$ 266,413	
30	1/1/2034	$ 14,105,000	$ 1,800,000	3.50%	$ 31,500.00	$ 266,412.50	$ 2,066,413	$ 2,332,825
31	7/1/2034					$ 234,912.50	$ 234,913	
32	1/1/2035	$ 12,305,000	$ 1,850,000	3.75%	$ 34,687.50	$ 234,912.50	$ 2,084,913	$ 2,319,825
33	7/1/2035					$ 200,225.00	$ 200,225	
34	1/1/2036	$ 10,455,000	$ 1,900,000	3.75%	$ 35,625.00	$ 200,225.00	$ 2,100,225	$ 2,300,450
35	7/1/2036					$ 164,600.00	$ 164,600	
36	1/1/2037	$ 8,555,000	$ 2,000,000	3.75%	$ 37,500.00	$ 164,600.00	$ 2,164,600	$ 2,329,200
37	7/1/2037	$ 6,555,000				$ 127,100.00	$ 127,100	
38	1/1/2038	$ 6,555,000	$ 2,100,000	3.75%	$ 39,375.00	$ 127,100.00	$ 2,227,100	$ 2,354,200
39	7/1/2038	$ 4,455,000	$ 1,100,000	3.75%	$ 20,625.00	$ 87,725.00	$ 1,187,725	
40	1/1/2039	$ 3,355,000	$ 1,100,000	4.00%	$ 22,000.00	$ 67,100.00	$ 1,167,100	$ 2,354,825
41	7/1/2039	$ 2,255,000	$ 1,100,000	4.00%	$ 22,000.00	$ 45,100.00	$ 1,145,100	
42	1/1/2040	$ 1,155,000	$ 1,155,000	4.00%	$ 23,100.00	$ 23,100.00	$ 1,178,100	$ 2,323,200
	Total		$ 32,355,000			$ 14,682,485.83	$ 47,037,486	$ 47,037,486

Five Year Average 2022 - 2026 $ 2,250,325

EVANSVILLE (INDIANA) WATERWORKS DISTRICT

SCHEDULE OF AMORTIZATION OF $85,000,000 PRINCIPAL AMOUNT OF
SRF WATERWORKS DISTRICT REVENUE BONDS, SERIES 2018
Principal payable semi- annually January 1st, beginning January I, 2021
Interest payable semi-annually January 1st and July 1st, beginning July I, 2019.
Assumed issue date January 1, 2019

	Date	Principal Balance	Principal	Interest Rate	Total Interest	Period Total	Fiscal Total
	7/1/2019	$ 21,250,000		2.50%	$ 132,812.50	$ 132,813	
	1/1/2020	$ 42,500,000		2.50%	$ 398,437.50	$ 398,438	$ 531,250
1	7/1/2020	$ 63,750,000		2.50%	$ 664,062.50	$ 664,063	
2	1/1/2021	$ 85,000,000	$ 1,610,000	2.50%	$ 929,687.50	$ 2,539,688	$ 3,203,750
3	7/1/2021	$ 83,390,000	$ 1,640,000	2.50%	$1,042,375.00	$ 2,682,375	
4	1/1/2022	$ 81,750,000	$ 1,670,000	2.50%	$1,021,875.00	$ 2,691,875	$ 5,374,250
5	7/1/2022	$ 80,080,000	$ 1,700,000	2.50%	$1,001,000.00	$ 2,701,000	
6	1/1/2023	$ 78,380,000	$ 1,730,000	2.50%	$ 979,750.00	$ 2,709,750	$ 5,410,750
7	7/1/2023	$ 76,650,000	$ 1,760,000	2.50%	$ 958,125.00	$ 2,718,125	
8	1/1/2024	$ 74,890,000	$ 1,790,000	2.50%	$ 936,125.00	$ 2,726,125	$ 5,444,250
9	7/1/2024	$ 73,100,000	$ 1,820,000	2.50%	$ 913,750.00	$ 2,733,750	
10	1/1/2025	$ 71,280,000	$ 1,850,000	2.50%	$ 891,000.00	$ 2,741,000	$ 5,474,750
11	7/1/2025	$ 69,430,000	$ 1,880,000	2.50%	$ 867,875.00	$ 2,747,875	
12	1/1/2026	$ 67,550,000	$ 1,910,000	2.50%	$ 844,375.00	$ 2,754,375	$ 5,502,250
13	7/1/2026	$ 65,640,000	$ 1,940,000	2.50%	$ 820,500.00	$ 2,760,500	
14	1/1/2027	$ 63,700,000	$ 1,970,000	2.50%	$ 796,250.00	$ 2,766,250	$ 5,526,750
15	7/1/2027	$ 61,730,000	$ 2,000,000	2.50%	$ 771,625.00	$ 2,771,625	
16	1/1/2028	$ 59,730,000	$ 2,030,000	2.50%	$ 746,625.00	$ 2,776,625	$ 5,548,250
17	7/1/2028	$ 57,700,000	$ 2,060,000	2.50%	$ 721,250.00	$ 2,781,250	
18	1/1/2029	$ 55,640,000	$ 2,090,000	2.50%	$ 695,500.00	$ 2,785,500	$ 5,566,750
19	7/1/2029	$ 53,550,000	$ 2,120,000	2.50%	$ 669,375.00	$ 2,789,375	
20	1/1/2030	$ 51,430,000	$ 2,150,000	2.50%	$ 642,875.00	$ 2,792,875	$ 5,582,250
21	7/1/2030	$ 49,280,000	$ 2,180,000	2.50%	$ 616,000.00	$ 2,796,000	
22	1/1/2031	$ 47,100,000	$ 2,210,000	2.50%	$ 588,750.00	$ 2,798,750	$ 5,594,750
23	7/1/2031	$ 44,890,000	$ 2,240,000	2.50%	$ 561,125.00	$ 2,801,125	
24	1/1/2032	$ 42,650,000	$ 2,270,000	2.50%	$ 533,125.00	$ 2,803,125	$ 5,604,250
25	7/1/2032	$ 40,380,000	$ 2,300,000	2.50%	$ 504,750.00	$ 2,804,750	
26	1/1/2033	$ 38,080,000	$ 2,330,000	2.50%	$ 476,000.00	$ 2,806,000	$ 5,610,750
27	7/1/2033	$ 35,750,000	$ 2,360,000	2.50%	$ 446,875.00	$ 2,806,875	
28	1/1/2034	$ 33,390,000	$ 2,390,000	2.50%	$ 417,375.00	$ 2,807,375	$ 5,614,250
29	7/1/2034	$ 31,000,000	$ 2,420,000	2.50%	$ 387,500.00	$ 2,807,500	
30	1/1/2035	$ 28,580,000	$ 2,450,000	2.50%	$ 357,250.00	$ 2,807,250	$ 5,614,750
31	7/1/2035	$ 26,130,000	$ 2,480,000	2.50%	$ 326,625.00	$ 2,806,625	
32	1/1/2036	$ 23,650,000	$ 2,510,000	2.50%	$ 295,625.00	$ 2,805,625	$ 5,612,250
33	7/1/2036	$ 21,140,000	$ 2,540,000	2.50%	$ 264,250.00	$ 2,804,250	
34	1/1/2037	$ 18,600,000	$ 2,570,000	2.50%	$ 232,500.00	$ 2,802,500	$ 5,606,750
35	7/1/2037	$ 16,030,000	$ 2,600,000	2.50%	$ 200,375.00	$ 2,800,375	
36	1/1/2038	$ 13,430,000	$ 2,630,000	2.50%	$ 167,875.00	$ 2,797,875	$ 5,598,250
37	7/1/2038	$ 10,800,000	$ 2,660,000	2.50%	$ 135,000.00	$ 2,795,000	
38	1/1/2039	$ 8,140,000	$ 2,690,000	2.50%	$ 101,750.00	$ 2,791,750	$ 5,586,750
39	7/1/2039	$ 5,450,000	$ 2,720,000	2.50%	$ 68,125.00	$ 2,788,125	
40	1/1/2040	$ 2,730,000	$ 2,730,000	2.50%	$ 34,125.00	$ 2,764,125	$ 5,552,250
	Total		$85,000,000		$ 24,160,250	$ 109,160,250	$ 109,160,250

Five Year Average 2022 - 2026 $ 5,441,250

Corrected
Combined Annual Debt Service
Open Market and SRF Debt

	Phase I	Phase II	Phase III
	2019	2020	2021 - 2025
Open Market Issuance $32.355 million	$ 1,136,486	$ 2,199,825	$ 2,250,325
SRF $85.0 million	$ 531,250	$ 3,203,750	$ 5,441,250
Total	$ 1,667,736	$ 5,403,575	$ 7,691,575
Increase		$ 3,735,839	$ 2,288,000
Petitioner's proposed annual debt service	$ 4,355,836	$ 8,543,713	$ 10,551,613
Increase		$ 4,187,876	$ 2,007,900
Difference between Petitioner and OUCC	$ 2,688,100	$ 3,140,138	$ 2,860,038

Estimated Interest Earned
on Outstanding Balance Open Market Debt
Annual Interest Rate 1.5%
Monthly Interest Rate 0.125%

Month	Unspent Loan Proceeds	Monthly Interest Earned	Annual Interest Earned
Jan-19	$ 32,355,000.00	$ 40,443.75	
Feb-19	$ 31,006,875.00	$ 38,758.59	
Mar-19	$ 29,658,750.00	$ 37,073.44	
Apr-19	$ 28,310,625.00	$ 35,388.28	
May-19	$ 26,962,500.00	$ 33,703.13	
Jun-19	$ 25,614,375.00	$ 32,017.97	
Jul-19	$ 24,266,250.00	$ 30,332.81	
Aug-19	$ 22,918,125.00	$ 28,647.66	
Sep-19	$ 21,570,000.00	$ 26,962.50	
Oct-19	$ 20,221,875.00	$ 25,277.34	
Nov-19	$ 18,873,750.00	$ 23,592.19	
Dec-19	$ 17,525,625.00	$ 21,907.03	$ 374,104.69
Jan-20	$ 16,177,500.00	$ 20,221.88	
Feb-20	$ 14,829,375.00	$ 18,536.72	
Mar-20	$ 13,481,250.00	$ 16,851.56	
Apr-20	$ 12,133,125.00	$ 15,166.41	
May-20	$ 10,785,000.00	$ 13,481.25	
Jun-20	$ 9,436,875.00	$ 11,796.09	
Jul-20	$ 8,088,750.00	$ 10,110.94	
Aug-20	$ 6,740,625.00	$ 8,425.78	
Sep-20	$ 5,392,500.00	$ 6,740.63	
Oct-20	$ 4,044,375.00	$ 5,055.47	
Nov-20	$ 2,696,250.00	$ 3,370.31	
Dec-20	$ 1,348,125.00	$ 1,685.16	$ 131,442.19

Estimated Interest Earned
on Outstanding Balance Open Market Debt
Annual Interest Rate 1.5%
Monthly Interest Rate 0.125%

Month	Unspent Loan Proceeds	Monthly Interest Earned	Annual Interest Earned
Jan-19	$ 147,700,000.00	$ 184,625.00	
Feb-19	$ 141,545,833.33	$ 176,932.29	
Mar-19	$ 135,391,666.67	$ 169,239.58	
Apr-19	$ 129,237,500.00	$ 161,546.88	
May-19	$ 123,083,333.33	$ 153,854.17	
Jun-19	$ 116,929,166.67	$ 146,161.46	
Jul-19	$ 110,775,000.00	$ 138,468.75	
Aug-19	$ 104,620,833.33	$ 130,776.04	
Sep-19	$ 98,466,666.67	$ 123,083.33	
Oct-19	$ 92,312,500.00	$ 115,390.63	
Nov-19	$ 86,158,333.33	$ 107,697.92	
Dec-19	$ 80,004,166.67	$ 100,005.21	$ 1,707,781.25
Jan-20	$ 73,850,000.00	$ 92,312.50	
Feb-20	$ 67,695,833.33	$ 84,619.79	
Mar-20	$ 61,541,666.67	$ 76,927.08	
Apr-20	$ 55,387,500.00	$ 69,234.38	
May-20	$ 49,233,333.33	$ 61,541.67	
Jun-20	$ 43,079,166.67	$ 53,848.96	
Jul-20	$ 36,925,000.00	$ 46,156.25	
Aug-20	$ 30,770,833.33	$ 38,463.54	
Sep-20	$ 24,616,666.67	$ 30,770.83	
Oct-20	$ 18,462,500.00	$ 23,078.13	
Nov-20	$ 12,308,333.33	$ 15,385.42	
Dec-20	$ 6,154,166.67	$ 7,692.71	$ 600,031.25

THE MUNICIPAL MARKET MONITOR (TM3)

Municipal Yield Curves as of 07/06/2018

		General Obligations						"AAA" Coupon Range	
		"AAA"	PRE-RE	INSURED	"AA"	"A"	"BAA"	"LOW"	"HIGH"
1	2019	1.49	1.51	1.59	1.51	1.69	1.96	5.00	5.00
2	2020	1.64	1.66	1.80	1.67	1.89	2.19	5.00	5.00
3	2021	1.77	1.79	1.94	1.82	2.07	2.39	5.00	5.00
4	2022	1.87	1.90	2.10	1.94	2.22	2.54	5.00	5.00
5	2023	1.97	2.00	2.24	2.05	2.36	2.68	5.00	5.00
6	2024	2.08	2.12	2.37	2.18	2.50	2.84	5.00	5.00
7	2025	2.20	2.24	2.51	2.32	2.64	2.97	5.00	5.00
8	2026	2.31	2.35	2.64	2.46	2.77	3.11	5.00	5.00
9	2027	2.38		2.72	2.55	2.85	3.19	5.00	5.00
10	2028	2.43		2.78	2.61	2.91	3.26	5.00	5.00
11	2029	2.47		2.82	2.66	2.95	3.31	5.00	5.00
12	2030	2.51		2.87	2.71	3.00	3.36	5.00	5.00
13	2031	2.55		2.91	2.75	3.04	3.40	5.00	5.00
14	2032	2.59		2.95	2.79	3.08	3.44	5.00	5.00
15	2033	2.63		2.99	2.83	3.12	3.48	5.00	5.00
16	2034	2.67		3.03	2.87	3.16	3.52	5.00	5.00
17	2035	2.71		3.06	2.91	3.20	3.55	5.00	5.00
18	2036	2.74		3.08	2.94	3.23	3.57	5.00	5.00
19	2037	2.76		3.10	2.96	3.25	3.59	5.00	5.00
20	2038	2.78		3.12	2.98	3.27	3.61	5.00	5.00
21	2039	2.80		3.14	3.00	3.29	3.62	5.00	5.00
22	2040	2.82		3.16	3.02	3.31	3.63	5.00	5.00
23	2041	2.83		3.17	3.03	3.32	3.64	5.00	5.00
24	2042	2.84		3.18	3.04	3.33	3.65	5.00	5.00
25	2043	2.85		3.19	3.05	3.34	3.66	5.00	5.00
26	2044	2.86		3.20	3.06	3.35	3.67	5.00	5.00
27	2045	2.87		3.21	3.07	3.36	3.68	5.00	5.00
28	2046	2.88		3.22	3.08	3.37	3.69	5.00	5.00
29	2047	2.89		3.23	3.09	3.38	3.70	5.00	5.00
30	2048	2.90		3.24	3.10	3.39	3.71	5.00	5.00

OUCC DR 2.1

DATA REQUEST

City of Evansville
Cause No. 45073

Information Requested:

Page 3 of Petitioner's Accountants' Report: lists "Allowance for legal, financial advisory, bond issuance costs, general project contingencies and rounding" of $1,404,088. Please provide a specific breakdown of the individual items that make up the $1,404,808. If a calculation was used to determine any of the items, please provide the calculation for each item.

Information Provided:

See Attachment OUCC DR 2.1-R1.pdf for a breakdown of the allowance for legal, financial advisory, bond issuance costs, general project contingencies and rounding.

Attachment:

OUCC DR 2.1-R1.pdf

EVANSVILLE (INDIANA) WATERWORKS DISTRICT

ESTIMATED ALLOWANCE FOR COSTS OF ISSUANCE
Proposed Waterworks District Revenue Bonds, Series 2018A

Service	Vendor	Amounts
Legal		
Bond counsel (Bonds) *	Barnes & Thornburg	$130,000
IURC counsel	Barnes & Thornburg	99,000
Local counsel *	Zeimer, Styman, Wetzel & Shoulders, LLP	20,000
SRF counsel	Bingham Greenebaum Doll LLP	20,000
Sub-total		269,000
Financial		
IURC rate case	Umbaugh	185,000
Accounting financial advisory; disclosure document and related *	Umbaugh	150,000
Sub-total		335,000
Other		
IURC bond issue fee ($147,355,000 par amount divided by 100 times $0.25)	State	368,388
IURC rate case fee	State	35,000
Rating fee	S&P	72,500
Trustee and RP&A services:	TBD	
Acceptance Fee		1,000
Annual Fee		500
Official Statement Printing	Pacesetter Press	1,000
Parity Report *	Umbaugh	8,000
Parity ® Electronic Bid Submission	Parity	1,500
CUSIP and service bureau fees	DTC	400
Legal advertising and misc.		500
General project contingencies and rounding		311,300
Sub-total		800,088
Total Estimated Costs of Issuance		$1,404,088

* Assumes two bond issues.

OUCC DR 2.2

DATA REQUEST

City of Evansville
Cause No. 45073

Information Requested:

On page 7 of his direct testimony, Mr. Baldessari notes that Petitioner has an "A+" rating with Standard and Poors. Please provide a copy of the most recent report from Standard Poors that supports Petitioner's current credit rating.

Information Provided:

See OUCC DR 2.2-R1.pdf for a copy of the most recent report from Standard and Poor's that supports Petitioner's current credit rating.

Attachment:

OUCC DR 2.2-R1.pdf

S&P Global
Ratings

RatingsDirect®

Summary:

Evansville, Indiana; Water/Sewer

Primary Credit Analyst:
Gregory Dziubinski, Chicago (312) 233-7085; gregory.dziubinski@spglobal.com

Secondary Contact:
Scott D Garrigan, New York (1) 312-233-7014; scott.garrigan@spglobal.com

Table Of Contents

Summary:

Evansville, Indiana; Water/Sewer

Credit Profile		
US$39.64 mil waterworks dist rev bnds ser 2016A due 01/01/2038		
Long Term Rating	A+/Stable	New
US$31.57 mil waterworks dist rfdg rev bnds ser 2016B due 01/01/2030		
Long Term Rating	A+/Stable	New

Rationale

S&P Global Ratings assigned its 'A+' rating and stable outlook to Evansville, Ind.'s series 2016A waterworks district revenue bonds and series 2016B waterworks district refunding revenue bonds and affirmed its 'A+' rating, with a stable outlook, on the system's existing debt.

The rating reflects, in our opinion, the combination of a very strong enterprise risk profile and a strong financial risk profile.

The enterprise risk profile reflects our opinion of the system's:

- Service area participation in the broad and diverse Evansville metropolitan statistical area (MSA) economy,
- Very low industry risk as a monopolistic service provider of an essential public utility,
- Monthly water rates we consider affordable relative to the service area's income, and
- Good operational management practices and policies.

The financial risk profile reflects our opinion of the system's:

- Adequate all-in debt service coverage (DSC), which we expect to improve significantly following rate increases in 2016 and 2017;
- Adequate liquidity;
- Moderately high system debt load with a debt-to-capitalization ratio of 60%; and
- Good financial management practices and policies.

Evansville is issuing its series 2016A bonds to fund the replacement of water mains at the end of or past their life expectancy and the replacement and relocation of water mains necessitated by local and state transportation projects, as well as to repay taxable waterworks bond anticipation notes issued in 2016. Evansville is issuing the series 2016B bonds to advance refund the system's series 2008 bonds.

Bond provisions, in our opinion, are a neutral credit factor. Net revenue of the city's waterworks district secures the bonds. The system has established a rate covenant that requires, at least, sufficiency coverage; an additional bonds test of 1.25x maximum annual DSC; and a debt service reserve funded at the least of the three-pronged test. We understand that officials will cash fund the debt service reserve for the 2016A bonds with bond proceeds and that surety bonds will satisfy the debt service reserve requirement for the 2016B bonds.

Evansville, in southwestern Indiana's Vanderburgh County, along the Ohio River, is the state's largest city south of Indianapolis. Evansville serves as the retail, trade, and services center for southwestern Indiana and portions of northwestern Kentucky. University of Evansville and University of Southern Indiana call Evansville home, as do multiple major hospitals, including Deaconess Health System and St. Mary's Medical Center. Despite this service orientation, there are several leading manufacturers in the area, including Berry Plastics Corp. and Toyota Motor Manufacturing Corp.

We consider the customer base diverse with no one customer exceeding 3% of revenue. The water district utility provides service to more than 62,000 customers. Residential customers accounted for 56% of revenue in 2015. The 10 leading customers accounted for 9.1% of total 2015 operating revenue. Management indicates the service base is coterminous with Vanderburgh County; however, there are customers in surrounding counties. Due to the broad service area, we consider Vanderburgh County's median household effective buying income adequate but below the national average at about 85%. Evansville's median household effective buying income is considerably lower at 76% of the national average. Service area growth has been marginal during the past few years, and management expects this to continue. The service area's role as the economic base of the Evansville MSA, which provides a broad and diverse economy, further supports the service area.

The city reviews rates annually. The city must submit rate increases to Indiana Utility Regulatory Commission (IURC), which must approve the rate hikes. IURC approved a two-phase rate increase for Evansville: The first increase of 26% took effect Nov. 7, 2016, and the second increase of 16% is planned for Jan. 1, 2018. These rate increases are considerable with their aim to improve the utility's finances; fund the replacement of an aging distribution system; and evaluate, design, and develop an alternative water treatment solution. The most recent rate hike increased the average water bill--using our benchmark of 6,000 gallons of usage monthly--to $28.50, representing an affordable 0.9% of median household effective buying income. Management expects to apply to IURC for another rate increase in 2018.

Based on our Operational Management Assessment, we view the district as good. The water supply system's water treatment plant has a capacity of 60 million gallons per day (mgd), which is more than sufficient to meet average needs of 22 mgd. Management indicates the water supply system complies with regulations. The system has a water-conservation policy. However, due to an ample water source, the system has not yet reached the threshold to reduce water usage. The city has broadened its public outreach and transparency, particularly on the city's and county's websites.

Consistent with the article titled "Methodology: Industry Risk," published Nov. 19, 2013, on RatingsDirect, we consider industry risk for the system very low, the most favorable assessment possible on a six-point scale with '1' being the best and '6' the worst.

The system's finances have been adequate when using unaudited pro forma statements provided by the city's financial consultant, which we expect to improve following the approval of considerable rate increases. All-in DSC, which includes payments in lieu of taxes, remained relatively level at roughly 1.1x from fiscal years 2013-2015. Management expects DSC to be roughly the same for fiscal 2016. Due to the recently approved 26% rate increase, adopted in November 2016 and the 16% increase that will take effect on Jan. 1, 2018, we expect all-in DSC to improve to, what we consider, good-to-strong levels.

Liquidity has been at levels we consider just adequate. Unrestricted cash and equivalents, which include operating and improvement funds balances, totaled $2.9 million, or 51 days' operating expenses, at fiscal year-end 2015. The system adopted a reserve policy that targets a minimum operations-and-maintenance fund balance of 45 days' operating expenses and an improvement fund balance of $500,000 that it will fund as money becomes available. Due to capital needs, particularly the replacement of aging water mains, we expect slow and steady liquidity improvement.

The system's debt profile shows a moderately high debt load with a debt-to-capitalization ratio at 60% for fiscal 2015. The current capital improvement plan (CIP) details the system's needs at roughly $125.5 million for fiscal years 20162021, $95 million of which management expects to fund with bond proceeds. Management is currently evaluating several options for water supply and treatment, including developing a new treatment plant for groundwater treatment or updating the current treatment facilities.

Based on our Financial Management Assessment, we view the system as good, indicating that financial practices exist in most areas but that governance officials might not formalize or regularly monitor all of them. Management highlights include its:

- Use of five-year historical trends for budgeting and operational performance analysis
- Monthly budget-to-actual and investment reports to the board of directors of the department of waterworks,
- Investment and debt policy, and
- Five-year CIP that it updates annually and includes funding sources for planned projects.

Outlook

The stable outlook reflects S&P Global Ratings' opinion that the system's financial profile will likely improve following significant approved rate increases by IURC. The outlook further reflects our view of the city's recognized role as a regional economy, which provides stability during the two-year outlook period.

Upside scenario

If the service area's economy were to expand further and if finances were to improve to sustainable levels, particularly regarding system liquidity, we could raise the rating over the longer term.

Downside scenario

We could lower the rating if financial performance were to deteriorate or if actual operations were to fail to meet the expected improvement of all-in DSC.

Ratings Detail (As Of November 17, 2016)

Evansville wtrwks (AGM)		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Evansville wtrwks		
Long Term Rating	A+/Stable	Affirmed
Evansville (BAM)		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Evansville Local Pub Imp Bnd Bank, Indiana		
Evansville, Indiana		

Ratings Detail (As Of November 17, 2016) (cont.)

Evansville Local Pub Imp Bnd Bank (Evansville) wtrwks

Long Term Rating	A+/Stable	Affirmed

Many issues are enhanced by bond insurance.

Certain terms used in this report, particularly certain adjectives used to express our view on rating relevant factors, have specific meanings ascribed to them in our criteria, and should therefore be read in conjunction with such criteria. Please see Ratings Criteria at www.standardandpoors.com for further information. Complete ratings information is available to subscribers of RatingsDirect at www.globalcreditportal.com. All ratings affected by this rating action can be found on the S&P Global Ratings' public website at www.standardandpoors.com. Use the Ratings search box located in the left column.

OUCC DR 4-7

DATA REQUEST

City of Evansville
Cause No. 45073

Information Requested:

In response to OUCC Data Request Question 2-1 the footnote at the bottom of Petitioner's attachment indicates its estimated issuance costs assumes two bond issuances. Is Petitioner still assuming two bond issuances? If yes, please explain the anticipated lender, timing, terms and amount of each bond issuance. Please provide an amortization schedule for each bond issuance. If Petitioner is not assuming two bond issuances, please explain why not.

Information Provided:

It is anticipated that there will be at least two bond issues; one open market bond issue and one SRF bond issue. The SRF program may want a bond issue in each year of the three (3) year rate proceeding. The funding source, timing, terms and amounts of each bond issuance are not fully known at this time. Management and its consulting engineers are currently determining the projects which will be funded through the SRF program and those which will be funded with an open market bond issue. As the financing plan for the projects, which will be funded through the SRF and the open market bond issues, are determined, we will supplement this response.

The Petitioner has filed an application with SRF as of June 15, 2018. SRF has indicated that there will be sufficient funds available to finance those projects the City determines are best suited to go through the SRF program. Conversations regarding the amounts and timing of the SRF issues will occur over the next several months.

OUCC DR 4-8

DATA REQUEST

City of Evansville
Cause No. 45073

Information Requested:

On page 7 of his testimony, Mr. Baldessari states "Over the next several months the Petitioner will be determining the amount and timing of the open market and SRF bond issuances." Has Petitioner determined the amount and timing of the open market and SRF bond issuances since it filed its testimony? If not, please explain when Petitioner will know the more precise nature and terms of its proposed financing?

Information Provided:

Please see response to DR 4-7.

OUCC DR 4-9

DATA REQUEST

City of Evansville
Cause No. 45073

Information Requested:

Does Petitioner have plans to issue debt through the SRF? Please explain your answer.

Information Provided:

Yes, please see response DR 4-7.

APPLICATION FORM
Drinking Water State Revolving Fund Loan Program (DWSRF)

Environmental Programs

Brownfields

Return completed form to:
DWSRF Administrator
100 North Senate Avenue, Rm. 1275
Indianapolis, IN 46204

RECEIVED
APR 25 2018
INDIANA FINANCE AUTHORITY
ENVIRONMENTAL PROGRAMS

I. APPLICANT and SYSTEM INFORMATION:

1. Applicant Name (community or water system name): City of Evansville Water and Sewer Utility
2. Public Water Supply ID #: IN5282002
3. Type of Applicant (check one):
   - X Municipality (City, Town, County, Township)
   - □ Regional Water District
   - □ Non-profit Water Corporation
   - □ For-profit Utility
   - □ School
   - □ Other _____
4. Location of the Proposed Project: USGS Quadrangle Map Name(s), Township(s), Range(s), Section(s): Varies

   City / Town: Evansville County(ies): Vanderburgh Civil Township(s): Center, Pigeon, Union, Perry, Knight, German, Scott
5. State Representative District: 75, 76, 77, 78 State Senate District: 49 & 50 Congressional District: IN-8
6. Population Served (available from the U.S. Census): 117,429
7. Population Trend (U.S. Census): Growing when Compared to 2010
8. Unemployment Data(Bureau of Labor Statistics http://data.bls.gov/pdq/querytool.jsp?survey=la): 3.6%
9. Median Household Income for Service Area: $35,786
10. Number of Connections: (current) Approximately 60,000 (post project) Same
11. Current User Rate/4,000 gal.: 18.97 (2016 – First Year of Increase) Estimated Post-Project Rate/4,000 gal.: $27.86 (2018 – Last Year of Increase)
12. Is the utility regulated by the Indiana Utility Regulatory Commission (IURC)? (Yes/No) Yes
13. Applicant's Data Universal Numbering System (DUNS) number[1]: 78-4782641

II. CAPACITY DEVELOPMENT:

Pursuant to the Safe Drinking Water Act, a DWSRF Loan Program Participant must certify that the Participant possesses the technical, managerial, and financial capacity to operate the water system or that the DWSRF Loan Program assistance will ensure compliance with the Safe Drinking Water Act (40 CFR 35.3520(d)(2)).

1. Does your system currently possess technical, managerial and financial capacity? (Yes/No) Yes
2. If no, will technical, managerial and financial capacity be achieved after the implementation of the water system's DWSRF project? (Yes/No) N/A

To assess the technical, managerial, and financial capacity of the water system, the Participant is encouraged to complete the "Indiana Department of the Environmental Management (IDEM) Capacity Development Self-Assessment", available at www.srf.in.gov .

[1] *SRF Participants must register with the Central Contractor Registry (CCR) which requires the Participant to have a DUNS number. For more information about how to register with the CCR and obtain a DUNS number, see www.srf.in.gov .*

III. CONTACT INFORMATION:

Authorized Signatory (an official of the water system that is authorized to contractually obligate the applicant with respect to the proposed project):

Name: Michael D. Labitzke
Title: Deputy Director of Utilities – Program Management Office
Telephone # (include area code): (812) - 421-2120 Ex. 2228
Address: 1931 Allens Ln.
City, State, Zip Code Evansville, IN 47720
E-mail: mlabitzke@umbaugh.com

Applicant Staff Contact (person to be contacted directly for information if different from authorized signatory):

Name: Michael D. Labitzke
Title: Deputy Director of Utilities - Program Management Office
Telephone # (include area code): (812) - 421-2120 Ex. 2228
Address: 1931 Allens Ln.
City, State, Zip Code Evansville, IN 47720
E-mail: mlabitzke@umbaugh.com

Certified Operator:

Name: Rick Glover
Telephone # (include area code): 812-428-0568
E-mail: rglover@ewsu.com

Grant Administrator (if applicable)

Contact: _____
Firm: _____
Address: _____
City, State, Zip Code _____
Telephone # (include area code): _____
Fax: _____
E-mail Address: _____

Consulting Engineer

Contact: Nicholas R. Jahn
Firm: VS Engineering, Inc.
Address: 203 Main St., Suite 102
City, State, Zip Code Evansville, IN 47708
Telephone # (include area code): (812) 401-0303
Fax: N/A
E-mail Address: nrjahn@vsengineering.com

Bond Counsel

Contact: Thomas A. Pitman
Firm: Barnes & Thornburg LLP
Address: 11 South Meridian Street
City, State, Zip Code Indianapolis, IN 46204-3535
Telephone # (include area code): (317) 231-6420
Fax: (317) 231-7433
E-mail: thomas.pitman@BTLaw.com

Financial Advisor

Contact: Douglas L. Baldessari
Firm: Umbaugh
Address: 8365 Keystone Crossing Suite 300
City, State, Zip Code Indianapolis, IN 46240-2687
Telephone # (include area code): (317) 465-1500
Fax: (317) 465-1550
E-mail Address: baldessari@umbaugh.com

Local Counsel

Contact: Marco L. DeLucio
Firm: Ziemer, Stayman, Weitzeland Shoulders
Address: 20 N.W. First Street, 9th Floor
City, State, Zip Code Evansville, Indiana 47706
Telephone # (include area code): (812) 424-7575
Fax: (812) 421-5089
E-mail: MDeLucio@zsws.com

IV. PROJECT INFORMATION:

1. **Project Name:** Refresh Evansville – Preliminary Engineering Report "A"

2. **Project Need** - Describe the facility needs in terms of age, condition, date of most recent rehabilitation/replacement, and public health or Safe Drinking Water Act compliance issues or violations:

   The Evansville Water and Sewer Utility (EWSU) distribution system serves an area of approximately 160 square miles and consists of over file million lineal feet of water mains, six elevated storage tanks, two ground storage reservoirs and seven booster stations. The water distribution mains vary in age and material with the vast majority being constructed prior to 1970 and over 60% consisting of cast iron. EWSU has continued to experience a high frequency of water main breaks in its system, specifically in areas where the mains were constructed prior to 1970 and of cast iron.

   As such EWSU developed the Refresh Evansville Program which is a long-term strategy to replace the City's aging water mains and supporting infrastructure. The Refresh Evansville Program Management (PM) team completed a condition assessment of all existing mains and evaluated each main based upon rate of failure, pipe age, operating pressure, pipe material, pipe size, location and consequence of failure. Utilizing the condition assessment, the PM team then developed a prioritized list of projects based on the aforementioned needs and the recommended year (or years) of construction. The results of this analysis are summarized in the Evansville Water and Sewer Utility's Drinking Water Master Plan. A full copy of this document is available upon request. Below are key exhibits from the Master Plan further detailing Project Needs:

TABLE 2.1
Length of Water Main by Material

Water Main Material	Total Length (feet)	Percent of Total (%)
Cast Iron	2,429,643	45.6
Polyvinyl Chloride	1,791,692	33.2
Ductile Iron	764,326	14.2
Asbestos Concrete	90,267	1.7
Concrete	64,761	1.2
Steel	47,766	0.9
Galvanized Steel	19,562	0.4
Polyethylene	18,358	0.3
Copper	2,682	0.05
Unknown	130,114	2.4

TABLE 2.2
Length and Percentage of Main by Installation Date

Mains Installed Prior To	Total Length (feet)	Percent of Total (%)	Cumulative Percentage (%)
1930	830,777	15.4	15.4
1940	992,138	3.0	18.4
1950	1,423,224	8.0	26.4
1960	2,030,424	11.3	37.7
1970	2,765,005	13.6	51.3
1980	3,087,299	6.0	57.3
1990	3,281,073	3.6	60.9
2000	3,354,734	1.4	62.2
2010	3,468,479	2.1	64.4
2015	3,472,901	0.08	64.4
Unknown	1,916,272	35.6	100

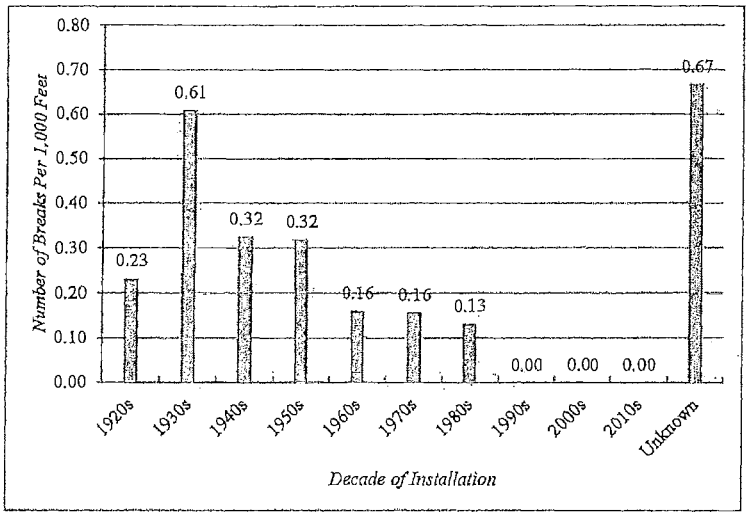

FIGURE 2-2
Main Breaks per 1,000 Feet of Cast Iron Main by Decade Installed

Refresh Evansville PER "A" seeks funding for various system wide projects to be constructed in years 2019 thru 2022. A summary table identifying all proposed projects, project costs, ranking and project needs have been attached to this document.

3. **Proposed Project** - Describe the scope of the proposed project and how it will address the applicant's needs as enumerated above. Please provide a map showing proposed work areas, if possible. Note: Projects that are solely for fire suppression or economic development are not eligible for funding under the Safe Drinking Water Act.

   Each proposed project is identified in the attached summary table. The need that each project is addressing, along with proposed project costs and the ranking as determined through EWSU's master planning initiative is also included. An exhibit identifying the proposed work areas is also attached.

   Will any part of the proposed project be constructed on previously undisturbed land[2]? (Yes/No) No

   If no, would it be accurate to describe the entire project as rehabilitation of existing system components? (Yes/No) Yes If no, why not?

   Does the utility have a back-up power source? (Yes/No) Yes

   Will the proposed project incorporate Green Project Components? (Yes/No) No
   If yes, complete a SRF Green Project Reserve Checklist. Checklist and more information can be found at **www.srf.in.gov**.

[2] *The Division of Historic Preservation and Archaeology's definition of "undisturbed land" is "any land, including agricultural land (row-crop farmland, orchards, pasture, fallow farmland, or land that was previously farmland but is now grass or other vegetation), that has not been substantially disturbed by recent soil disturbing activities."*

4. **Project Cost Estimate:**

Source (intake or wells)	$
Treatment	$
Storage	$
Distribution/Transmission	$148,881,800.00
Other:	$
TOTAL CONSTRUCTION:	$
Non-construction Costs	$148,881,800.00
TOTAL ESTIMATED PROJECT COST:	$148,881,800.00

Other Funding Sources:

	Application Round (date)	Amount Requested (dollars)	Amount Awarded (if applicable)
Office of Community and Rural Affairs Community Focus Fund			
U.S. Dept. of Commerce Economic Development Administration			
U.S. Dept. of Agriculture Rural Development			
Local Funds			
Other			

5. **Will this project proceed if other funding sources are not in place?** (Yes/No) Yes

6. **Anticipated SRF Loan Amount (after other funding):** $148,881,800.00

7. **Anticipated Dates:**

Preliminary Engineering Report (PER) submittal: June 15, 2018

Contract Award: Varies

Construction Start: Varies

Construction Complete: Varies

V. SIGNATURE:

I certify that I am legally authorized by the legislative body to sign this application. To the best of my knowledge and belief, the foregoing information is true and correct.

Michael D Labitzke
Signature of Authorized Signatory (Community Official)

Michael D. Labitzke, P.E.
Printed or Typed Name

Deputy Director Utilities, Program Management Office
Title of Authorized Signatory

April 24, 2018
Date

REFRESH EVANSVILLE - PRELIMINARY ENGINEERING REPORT "A" SUMMARY OF PROJECTS FOR STATE REVOLVING FUND, DRINKING WATER APPLICATION						
PER #	Project Costs - 2017 Dollars		Construction Year	Project Length (lft)	Average Ranking	Project Need
	Project Name	Construction				
1	Neighborhood of Covert, Vann, Graham, and Hawthorne	$3,007,000.00	2021	9700	32.5	Breaks, Age, Material
2	Covert Ave - Phase II and Wedge Ave	$1,209,000.00	2021	3900	90.5	Age
3	Presidents Neighborhood	$7,321,000.00	2019	20400	N/A	Current project
4	Sweetser Rotherwood Area	$4,567,000.00	2019	15800	N/A	Current project
5	Division St. - Vann to Stockwell	$1,209,000.00	2021	3900	90.5	Age
6	Washington and Second - Relocation	$1,385,000.00	2019	2300	N/A	Current project
7	Hogue Rd., New Harmony Road and Harmony Way	$6,447,000.00	2019	20500	N/A	Current project
8	Claremont, Bosse, and Craig Aves	$2,263,000.00	2020	7300	26	Age, Pressure, Material
9	Peerless Road, Upper Mt Vernon to Moya	$1,550,000.00	2021	5000	29	Location, Consequence of Failure
10	Speaker Rd, James Ave, Nolan Ave	$899,000.00	2021	2900	46.5	Age, Pressure
11	Upper Mt Vernon - Phase I, Red Bank Road, and New Harmony Road	$5,146,000.00	2020	16600	10	Age, Pressure, Material
12	Maryland Ave, Harmony to Wessel	$1,178,000.00	2021	3800	48.5	Age
13	Allens Ln - Phase I	$837,000.00	2020	2700	2.5	Road, Age, Material, Pressure
14	Grove Street, South of Allens Lane	$806,000.00	2020	2600	4	Road, Age, Material, Location
15	Charlotte and Russel Sts	$1,085,000.00	2021	3500	28	Breaks, Age, Pressure
16	Stanley Ave, Governor to dead end east of Kerth	$1,186,000.00	2020	5200	N/A	Current project
17	Kansas Road, St. Petersburg to I-69 - Relocation	$2,585,000.00	2019	6500	N/A	INDOT Relocation
18	US 41 and Lynch Rd	$4,154,000.00	2020	13400	17	Road, Breaks, Age, Material, Location
19	Schmitt, Whetstone & Bexley	$998,200.00	2020	3220	17.5	Age, Material
20	Senate Ave, Petersburg to Kentucky & St George	$3,038,000.00	2021	9800	34.5	Age, Size
21	First Ave, Pigeon Creek to Booster Station	$2,374,600.00	2021	7660	38.5	Breaks, Age, Size, Location, Booster Station Demand
22	Morgan Ave, Fares to Garvin	$1,271,000.00	2021	4100	32	Breaks, Age, Location
23	Columbia - Phase I, Fares, Columbia to Morgan	$2,914,000.00	2021	9400	95.5	Breaks, Age, Location
24	Fendrich Neighborhood	$2,077,000.00	2020	6700	N/A	Current project
25	Vann Ave, Graham to Covert	$2,108,000.00	2022	6800	109	Age, Material

REFRESH EVANSVILLE - PRELIMINARY ENGINEERING REPORT "A" SUMMARY OF PROJECTS FOR STATE REVOLVING FUND, DRINKING WATER APPLICATION						
PER #	Project Costs - 2017 Dollars		Construction Year	Project Length (lft)	Average Ranking	Project Need
	Project Name	Construction				
26	Morton and Elliot	$1,643,000.00	2022	5300	75	Age, Location
27	Broadway, Phase II & II, Schutte Road, Broadway to USI Tank	$8,215,000.00	2022	26500	77	Age, Location
28	Lloyd Expressway, Wabash to Tekoppel	$3,689,000.00	2022	11900	50	Road, Breaks, Age, Pressure, Size, Location
29	Maryland Ave and Buchanan Road	$3,410,000.00	2022	11000	66.5	Age, Location
30	Mount Vernon Rd, Upper Mt Vernon to Michigan	$3,565,000.00	2022	11500	81	Age
31	9th Ave, Franklin St, and Michigan St	$3,596,000.00	2022	11600	55	Road, Age, Size, Location
32	Franklin Ave and Illinois east of Pigeon Creek	$961,000.00	2022	3100	53.5	Age, Location
33	Mesker Park - Phase I & II	$3,503,000.00	2021	11300	46.5	Road, Age, Pressure, Location
34	Neighborhood of Buena Vista, 1st, and Pigeon Creek	$7,936,000.00	2022	25600	13.5	Breaks, Age, Material
35	First Ave, Booster to Reservoir, Campground Road to Petersburg	$5,983,000.00	2022	19300	49.5	Age, Pressure, Material, Size
36	St George - Phase II	$3,441,000.00	2022	11100	52	Road, Age, Size, Location
37	Petersburg Rd and US 41	$7,099,000.00	2022	22900	88	Road, Pressure, Size, Location
38	Neighborhood of Crossgate, Fulton, Mill, and Kratzville	$1,705,000.00	2022	5500	94.5	Age, Pressure
39	Residential area on Idlewild and Allens west of 1st Ave	$2,790,000.00	2022	9000	64	Breaks, Age, Pressure
40	Martins Lane, Burkhardt to Newburgh	$2,635,000.00	2022	8500	100	Age
41	Division Street & Canal	$1,705,000.00	2022	5500	45	Road, Age, Size, Location
42	Residential/Commercial area bound by Stringtown, US 41, Diamond, and Morgan	$5,549,000.00	2022	17900	49	Road, Breaks, Age, Material, Location
43	E Morgan Ave and Old Boonville Hwy	$2,759,000.00	2022	8900	50.5	Road, Age, Location
44	Stockwell Road, Indiana to Morgan	$1,395,000.00	2022	4500	61	Age, Location
45	Virginia Ave and Oak Hill Rd east of US 41	$2,077,000.00	2022	6700	61	Road, Age, Size, Location
46	Downtown area on 1st Ave and 2nd Ave	$3,875,000.00	2022	12500	87	Age
47	Washington Ave - Phase I & II	$3,906,000.00	2022	12600	58	Road, Breaks, Age, Location
48	HSPS 4, Clearwell and Transmission Mains	$4,250,000.00	2019	8500	100	Effluent Pump Station, Age, Size
49	Lincoln Booster Station	$1,580,000.00	2020	6800	109	Age, Material
	Totals	$148,881,800.00		471,680		

PRELIMINARY ENGINEERING REPORT - A

SUMMARY OF PROJECTS

JUNE 2018

RECEIVED
JUN 15 2018
INDIANA FINANCE AUTHORITY
ENVIRONMENTAL PROGRAMS

PREPARED FOR:

Evansville
WATER AND SEWER UTILITY

AS PART OF:

refresh
EVANSVILLE

PREPARED BY:

VS ENGINEERING, INC.

Civil • Structural • Transportation • Environmental

IN ASSOCIATION WITH:

Clark Dietz

WESSLER ENGINEERING

HNTB

refresh EVANSVILLE

VS ENGINEERING

SUMMARY OF PROJECTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF INCLUDED PER'S

PROJECT #	PROJECT NAME
1	Neighborhood of Covert, Vann, Graham, and Hawthorne
2	Covert Avenue - Phase II and Wedge Avenue
3	President's Neighborhood
4	Sweetser Rotherwood Area
~~5~~	~~Division St, Vann to Stockwell~~ (Project Removed)
6	Washington and Second
7	Hogue Rd, New Harmony Rd, Harmony Way
8	Claremont, Bosse, and Craig Avenues
9	Peerless Road
10	Speaker Road, James Avenue, and Nolan Avenue
11	Upper Mount Vernon - Phase I, Red Bank Road and New Harmony Road
12	Maryland Avenue, Harmony to Wessel
13	Allens Lane - Phase I
14	Grove Street
15	Charlotte and Russell Avenue
16	Stanley Ave, Governor to Kerth
17	Kansas Road, Petersburg to Baldwin
18	US 41, St. George to Lynch Road
19	Schmitt Lane, Whetstone Lane, Bexley Court
20	Senate Avenue, Petersburg Road, Feltman Drive and Campground Road
21	First Avenue, Pigeon Creek to Booster Station
22	Morgan Avenue - Phase III, Fares to Heidelbach
23	Columbia - Phase I, Fares, Columbia to Morgan
24	Fendrich Neighborhood
25	High Service Pump Station and Clearwell
26	Lincoln Booster Station

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VS ENGINEERING

LIST OF ATTACHMENTS

Attachment A	Signatory Authorization Resolution
Attachment B	PER Acceptance Form
Attachment C	Public Notice, Comments, & Transcript of Public Hearing
Attachment D	2019-2021 Rate Case Water Main Replacement Projects Hydraulic Modeling Memorandum
Attachment E	Financial Information Form
Attachment F	Preliminary Design Summary

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VSENGINEERING

I. DESCRIPTION OF PROJECTS

Writer's Note: The *italicized* excerpts below were taken directly from the Evansville Water and Sewer Utility, Water Master Plan, Dated September 2016 and authored by HNTB Corporation. A full copy of the master plan is available upon request.

This Preliminary Engineering Report (PER) – A is for a total of 25 projects for which the City of Evansville Water and Sewer Utility (EWSU) request funding assistance through the State Revolving Loan Fund (SRF) Drinking Water Program. The funds being requested by PER – A are for construction only and would be closed in early 2018 prior to the end of the calendar year.

EWSU's distribution system serves an area of approximately 160 square miles and consists of over file million lineal feet of water mains, six elevated storage tanks, two ground storage reservoirs, and sever booster stations.

The existing water mains vary in size from 1-inch to 60 inches in diameter and have been installed over time since the late 1800s with over half of the mains installed prior to 1970. The total lengths of the water mains are broken down by material in Table 2.1 and by installation date in Table 2.2.

TABLE 2.1
Length of Water Main by Material

Water Main Material	*Total Length (feet)*	*Percent of Total (%)*
Cast Iron	2,429,643	45.6
Polyvinyl Chloride	1,791,692	33.2
Ductile Iron	764,326	14.2
Asbestos Concrete	90,267	1.7
Concrete	64,761	1.2
Steel	47,766	0.9
Galvanized Steel	19,562	0.4
Polyethylene	18,358	0.3
Copper	2,682	0.05
Unknown	130,114	2.4

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TABLE 2.2
Length and Percentage of Main by Installation Date

Mains Installed Prior To	*Total Length (feet)*	*Percent of Total (%)*	*Cumulative Percentage (%)*
1930	830,777	15.4	15.4
1940	992,138	3.0	18.4
1950	1,423,224	8.0	26.4
1960	2,030,424	11.3	37.7
1970	2,765,005	13.6	51.3
1980	3,087,299	6.0	57.3
1990	3,281,073	3.6	60.9
2000	3,354,734	1.4	62.2
2010	3,468,479	2.1	64.4
2015	3,472,901	0.08	64.4
Unknown	1,916,272	35.6	100

Over 90% of the distribution system is constructed of cast iron, ductile iron, or polyvinyl chloride (PVC). Mains constructed of asbestos concrete, also called transite, and galvanized steel are all planned to be replaced and have been included in the proposed improvements.

The majority of mains were installed prior to 1970, though it is unknown when over a third of the system was installed. It has been common practice for water utilities to prioritize main replacement based exclusively on age of the pipe, but this could result in an inefficient allocation of funds if other criteria such as the criticality of the main or historical rate of failure are not considered.

To identify the water mains with the highest priority for replacement, all water mains in the distribution system were rated based on the following criteria:

- *Historical Rate of Failure – the work orders for main failures were utilized to count the number of breaks for each main segment. The number of breaks was then normalized per 100 lineal feet of main.*
- *Pipe Age – the installation dates for the mains were used to categorize each main into installation decades. If the installation date of the main was unknown, 1975 was assumed. Any main that was installed in the last 20 years was not considered for replacement as part of the Master Plan.*
- *Operating Pressure – the hydraulic model results were used to assign an approximate operating pressure (in pounds per square inch (psi)) to each main segment.*
- *Pipe Material – the water main's material of construction (if known).*

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- *Pipe Size – the water main's nominal pipe diameter.*
- *Location – the physical location of the water mains were considered. The scores varied depending on the type of road or highway under which it is installed, if the main is located under a railroad or Pigeon Creek, if the main is located under a building, or if the main is located within 500 feet of a storage tank. If a main met the requirements of multiple location options, the higher scoring location option was used in ranking the main.*
- *Consequence of Failure – the hydraulic model was utilized to determine the predicted demand short fall should each individual main segment fail.*

The seven booster stations were evaluated in two ways. First the site visits were used to identify proposed improvements. Second the hydraulic model with the projected demand was used to determine of the booster stations would have sufficient capacity meet future needs. For the purposes of this Water Master Plan, it was assumed that an upgrade or expansion would be required if the flow out of a booster station meets or exceeds 80-percent of the design capacity of station and the intended service life of a pump is approximately 30 years.

Upon the completion of the master planning process EWSU developed and implemented the Refresh Evansville Program, which is a long-term strategy to replace aging water mains and supporting infrastructure.

The projects identified in this PER were identified as part of EWSU's master planning process and are being implemented through the Refresh Evansville Program. These projects will serve to:

- Construct multiple water distribution main replacement projects.
- Replace an existing boster station
- Add additional clear well capacity at the Water Treatment Plant

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II. PROJECTS INCLUDED IN LOAN CLOSING

PER – A will include individual PER's for 25 projects beginning with Project #1. The following projects are included within PER – A:

PROJECT #	PROJECT NAME
1	Neighborhood of Covert, Vann, Graham, and Hawthorne
2	Covert Avenue - Phase II and Wedge Avenue
3	President's Neighborhood
4	Sweetser Rotherwood Area
~~5~~	~~Division St, Vann to Stockwell~~ (Project Removed)
6	Washington and Second
7	Hogue Rd, New Harmony Rd, Harmony Way
8	Claremont, Bosse, and Craig Avenues
9	Peerless Road
10	Speaker Road, James Avenue, and Nolan Avenue
11	Upper Mount Vernon - Phase I, Red Bank Road and New Harmony Road
12	Maryland Avenue, Harmony to Wessel
13	Allens Lane - Phase I
14	Grove Street
15	Charlotte and Russell Avenue
16	Stanley Ave, Governor to Kerth
17	Kansas Road, Petersburg to Baldwin
18	US 41, St. George to Lynch Road
19	Schmitt Lane, Whetstone Lane, Bexley Court
20	Senate Avenue, Petersburg Road, Feltman Drive and Campground Road
21	First Avenue, Pigeon Creek to Booster Station
22	Morgan Avenue - Phase III, Fares to Heidelbach
23	Columbia - Phase I, Fares, Columbia to Morgan
24	Fendrich Neighborhood
25	High Service Pump Station and Clearwell
26	Lincoln Booster Station

Individual project PER's for each project can be located within this document by opening the binder to the tab that corresponds to the desired project number. Detailed project information, as required by SRF, for each identified project can be found in the individual project PER's.

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III. SUMMARY OF PROJECT COSTS

Total estimated construction costs for all projects are approximately 85.2 million. A complete breakdown of estimated project costs can be found below in Tables SOP-1 (SRF Table II), SOP-2 (SRF Table III) and Table SOP- 3 (SRF Table IV).

Table SOP-1: Overall Construction Costs Summary (SRF Table II)

PROJECT #	PROJECT NAME	CONSTRUCTION COST
1	Neighborhood of Covert, Vann, Graham, and Hawthorne	$2,925,000
2	Covert Avenue - Phase II and Wedge Avenue	$1,204,000
3	President's Neighborhood	$7,314,000
4	Sweetser Rotherwood Area	$5,372,000
~~5~~	~~Division St, Vann to Stockwell~~ (Project Removed)	~~N/A~~
6	Washington and Second	$800,000
7	Hogue Rd, New Harmony Rd, Harmony Way	$7,253,586
8	Claremont, Bosse, and Craig Avenues	$2,750,400
9	Peerless Road	$1,562,284
10	Speaker Road, James Avenue, and Nolan Avenue	$859,867
11	Upper Mount Vernon - Phase I, Red Bank Road and New Harmony Road	$5,176,545
12	Maryland Avenue, Harmony to Wessel	$703,935
13	Allens Lane - Phase I	$940,972
14	Grove Street	$894,119
15	Charlotte and Russell Avenue	$1,026,807
16	Stanley Ave, Governor to Kerth	$1,772,746
17	Kansas Road, Petersburg to Baldwin	$2,193,344
18	US 41, St. George to Lynch Road	$1,965,815
19	Schmitt Lane, Whetstone Lane, Bexley Court	$1,350,423
20	Senate Avenue, Petersburg Road, Feltman Drive and Campground Road	$1,962,565
21	First Avenue, Pigeon Creek to Booster Station	$5,583,288
22	Morgan Avenue - Phase III, Fares to Heidelbach	$2,182,839
23	Columbia - Phase I, Fares, Columbia to Morgan	$3,486,359
24	Fendrich Neighborhood	$2,250,311
25	High Service Pump Station and Clearwell	$21,032,153
26	Lincoln Booster Station	$2,622,000
	Contingencies (Included in cost)	N/A
	Construction Costs Sub-Total	$85,185,358

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Table SOP-2: Overall Project Costs Summary (SRF Table III)

Administrative and Legal	$0.00
Land and Rights-of-Way Acquisition	$0.00
Relocation	$0.00
Engineering Fees	N/A
Design	N/A
Construction	N/A
Other	N/A
Project Inspection	N/A
Costs Related to Start-Up	$0.00
Non Construction Costs Sub-Total	$0.00
Construction Costs Sub-Total (Table SOP-1)	$85,185,358
Total Project Cost	$85,185,358

Engineering Fees have already been encumbered by EWSU as on-call contracts through the Refresh Evansville Program and therefore have not been included in this PER. SRF funding for engineering fees is not being requested at this time.

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Table SOP-3: Overall DWSRF Loan Program Financial Information Form (SRF Att. C)

Proposed Project Costs:	
Supply / Wells Cost	$0.00
Transmission / Distribution System Cost	$72,016,421
Treatment Cost	$0.00
Storage Cost	$13,168,937
Subtotal Construction Cost	TBD
Contingencies (should not exceed 10% of construction cost) (included in costs)	N/A
Non-Construction Costs	$0.00
Total Proposed Project Cost	$85,185,358
The Following are not SRF Loan Program Eligible:	
Previously funded SRF components that have not met useful life	$0.00
Materials and work done on private property	$0.00
Grant applications and income surveys done for other agencies	$0.00
Expenses incurred as a part of forming a utility, RWD or CD	$0.00
Other	$0.00
Total Ineligible Costs	$0.00
List Other Grant / Loan Funding Sources and Amounts	
Other Grants	$0.00
Other Loans	$0.00
Hook-on Fees	$0.00
Cash on Hand	$0.00
Total Other Funding Sources	$0.00
Requested SRF Loan	$85,185,358
Estimated Post-Project User Rate for 4,000 Gallons	$27.86
Anticipated SRF Interest Rate	2.00%

Financial Advisor: Douglas L. Baldessari Firm: Umbaugh Telephone: (317)-465-1500 Email: baldessari@umbaugh.com	Bond Counsel: Thomas A. Pitman Firm: Barnes & Thornburg LLP Telephone: (317)-231-6420 Email: thomas.pitman@BTLaw.com

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ATTACHMENT A

SIGNATORY AUTHORIZATION RESOLUTION

Appendix Section Common Across all Projects

APPENDIX SECTION TO BE UPDATED
DRAFT DOCUMENTS UTILIZED AS PLACEHOLDERS

SRF Loan Program
Signatory Authorization Resolution

Whereas, the _____ [insert name of Utility / Political Subdivision] of _____ [insert location], Indiana, (the "Participant") has plans for a _____ [insert one: wastewater / drinking water] infrastructure improvement project to meet State and Federal regulations and the Participant intends to proceed with the construction of such project:

Now, therefore, be it resolved by the Council / Board of Trustees, the governing body of the Participant, that:

1. _____ [insert name] be authorized to make application for a State Revolving Fund Loan ("SRF Loan") and provide the SRF Loan Program such information, data and documents pertaining to the loan process as may be required, and otherwise act as the authorized representative of the Participant; and

2. The Participant agrees to comply with State and Federal requirements as they pertain to the SRF Loan Program; and

3. Two certified copies of this Resolution be prepared and submitted as part of the Participant's Preliminary Engineering Report.

Adopted and Passed by the Council / Board of Trustees of the Utility / Political Subdivision of _____ [insert location], Indiana, this _____ [insert day] day of _____ [insert month], of 20____ [insert year].

Council / Board of Trustees

_____
[insert name], President

Attest: _____
[insert name], Secretary / Clerk Treasurer

Approved and signed by the Mayor of _____ [insert location], Indiana this _____ [insert day] day of _____ [insert month], of 20____ [insert year].

_____
[insert name], Mayor

Attest: _____
[insert name], Secretary / Clerk Treasurer

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ATTACHMENT B

PER ACCEPTANCE FORM

Appendix Section Common Across all Projects

APPENDIX SECTION TO BE UPDATED
DRAFT DOCUMENTS UTILIZED AS PLACEHOLDERS

SRF Loan Program
PER Acceptance Resolution

Whereas, the _____ [insert Utility / Political Subdivision] of _____ [insert location], Indiana, has caused a Preliminary Engineering Report ("PER"), dated _____, to be prepared by the consulting firm of_____; and

Whereas, said PER has been presented to the public at a public hearing held on _____ [insert date], at _____ [insert location], for public comment; and

Whereas, the _____ [insert Utility / Political Subdivision] Council / Board of Trustees finds that there was not sufficient evidence presented in objection to the recommended project in the PER.

Now, therefore be it resolved that:

1. The PER dated _____ [insert date] _____be approved and adopted by the _____ [insert Utility / Political Subdivision] Council / Board of Trustees; and

2. Said PER be submitted to the State Revolving Fund Loan Program for review and approval.

Adopted and Passed by the Council / Board of Trustees of the Utility / Political Subdivision of _____ [insert location], Indiana, this _____ [insert day] day of _____ [insert month], of 20____ [insert year].

Council / Board of Trustees

_____
[insert name], President

Attest: _____
[insert name], Secretary / Clerk Treasurer

Approved and signed by the Mayor of _____ [insert location], Indiana this _____ [insert day] day of _____ [insert month], of 20____ [insert year].

_____
[insert name], Mayor

Attest: _____
[insert name], Secretary / Clerk Treasurer

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ATTACHMENT C

PUBLIC NOTICE, COMMENTS, & TRANSCRIPT OF PUBLIC HEARING

Appendix Section Common Across all Projects

APPENDIX SECTION TO BE UPDATED
DRAFT DOCUMENTS UTILIZED AS PLACEHOLDERS

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ATTACHMENT D

2019-2021 RATE CASE WATER MAIN REPLACEMENT PROJECTS HYDRAULIC MODELING MEMORANDUM

Appendix Section Common Across all Projects

APPENDIX SECTION TO BE UPDATED
DRAFT DOCUMENTS UTILIZED AS PLACEHOLDERS

2019-2021 Rate Case Water Main Replacement Projects Hydraulic Modeling Memorandum

Evansville, Indiana
72158-PL-001
May 18, 2018

Background

The City of Evansville Water and Sewer Utility (EWSU) retained VS Engineering to prepare Preliminary Engineering Reports (PER) for the proposed for water main replacement projects for years 2019 to 2021. As part of the PERs, VS has requested distribution system modeling to confirm project requirements and justification for a select number of projects.

Evaluation

The proposed water main replacement projects identified by VS Engineering as needing modeling were evaluated using the existing WaterCAD distribution system model as needed. Numerous projects were not modeling as explained in the following paragraphs. For the purposes of this evaluation, new mains 12-inch and smaller were assumed to be PVC with Hazen-Williams "C" values of 140 and new mains 16-inch and larger were assumed to be ductile iron with Hazen-Williams "C" values of 130. The evaluations were conducted at steady state for an average day (AD) demand of approximately 29 MGD and a maximum day (MD) demand of approximately 35 MGD. In general, two replacement scenarios were evaluated and the resulting pressures and available fire flows were compared to existing conditions and to each other.

Project 6 - Washington and Second

Project 6 includes relocation of existing 6-inch, 8-inch, and 16-inch water mains. No modeling was done for Project 6. The water mains are being relocated due to conflicts with a road improvement project. All mains will be replaced with a minimum of 8-inch and a 16-inch will be installed on Adams Avenue.

Project 8 – Claremont, Bosse, and Craig Avenues

Project 8 includes replacement of existing 2-inch water main on Boehne Avenue, 4-inch water main on Craig, Bosse, and Claremont Avenues west of Tekoppel and replacement of existing 8-inch and 12-inch water mains on Barker and Clarement Avenues east of Tekpokkel. Two scenarios were modeled for Project 8: 8-inch water main on Claremont Avenue east of Tekoppel and 12-inch water main on Claremont Avenue east of Tekoppel. All other mains west of

Tekoppel will be replaced with 8-inch to provide sufficient fire flows for the residential area served and the main on Barker Avenue will be replaced in-kind with a 12-inch water main. **Table 1** below summarizes the differences between the replacement scenarios and the existing conditions. The total available fire flow in the table is sum of available fire flows in the entire distribution system.

Table 1. Claremont, Bosse, and Craig Avenues Model Results

	Existing	8-inch on Claremont	12-inch on Claremont
Average Static Pressure AD (psi)	67.2	67.3	67.3
Total Available Fire Flow AD (gpm)	4,632,475	4,746,113	4,770,950
Average Static Pressure MD (psi)	66.6	66.8	66.8
Total Available Fire Flow MD (gpm)	4,584,464	4,697,765	4,722,807

Based on the model results, a 12-inch on Claremont Avenue provides improved fire flows and maintains the water distribution system grid approach and connects two existing 12-inch mains on Barker and Tekoppel. Therefore 12-inch is the recommended size for main replacement.

Project 10 – Speaker Road, James Avenue, Nolan Avenue

Project 10 includes replacement of existing 6-inch and 8-inch mains. No modeling was done for Project 10. The existing water main will be replaced with an 8-inch main up to the last hydrants on James and Nolan to provide sufficient fire flows for the residential area served and then the main may reduce to 4-inch from the last hydrants on James and Nolan to the dead-ends.

Project 11 – Upper Mt. Vernon – Phase I, Red Bank Road, and New Harmony Road

Project 11 includes replacement of existing 6-inch and 16-inch water mains on Upper Mt. Vernon Road, 6-inch water main on Red Bank Road, and 12-inch water main on New Harmony Road. Four scenarios were modeled for Project 8: 12-inch water main on New Harmony Road with either 8-inch or 12-inch water main on Red Bank Road and 16-inch water main on New Harmony Road with either 8-inch or 12-inch water main on Red Bank Road. A 16-inch water main will be installed on Upper Mt. Vernon to consolidate the existing 16-inch and 6-inch mains and maintain 16-inch main feeding the Upper Mt. Vernon Tank. **Table 2** below summarizes the differences between the replacement scenarios and the existing conditions. The total available fire flow in the table is sum of available fire flows in the entire distribution system.

Table 2. Upper Mt. Vernon – Phase I, Red Bank Road, and New Harmony Road Model Results

	Existing	12-inch on New Harmony and 8-inch on Red Bank	12-inch on New Harmony and 12-inch on Red Bank	16-inch on New Harmony and 8-inch on Red Bank	16-inch on New Harmony and 12-inch on Red Bank
Average Static Pressure AD (psi)	67.3	67.2	67.2	67.2	67.2
Total Available Fire Flow AD (gpm)	4,632,475	4,725,976	4,731,577	4,726,586	4,731,901
Average Static Pressure MD (psi)	66.6	66.6	66.6	66.6	66.6
Total Available Fire Flow MD (gpm)	4,584,464	4,678,052	4,683,971	4,678,737	4,684,265

Based on the model results, the 16-inch on New Harmony and 12-inch on Red Bank provide improved fire flows. These also provide an additional route to supply water to the Upper Mt. Vernon Road Tank should a problem occur in the existing water mains on either of Mount Vernon Avenue, Harmony Way, or Koring Road that serve as the primary routes to feed the tank.

Project 13 – Allens Lane – Phase I

Project 13 includes replacement of existing 4-inch and 6-inch water mains. No modeling was done for Project 13. The existing water main will be replaced with an 8-inch main to connect to an existing 8-inch under Diamond Avenue and to provide sufficient fire flows for the residential area served.

Project 15 – Charlotte and Russel Streets

Project 15 includes replacement of existing 2-inch, 4-inch, and 6-inch water mains. No modeling was done for Project 15. The existing water main will be replaced with an 8-inch main to provide sufficient fire flows for the residential area served. The water main on Bement Avenue will be replaced with 12-inch to connect the existing 12-inch on St. Joseph with 12-inch planned to be installed in a future replacement project on Bement and Mesker Park Drive.

Project 18 – US 41 and Lynch Road

Project 18 includes the replacement of parallel water mains that vary in size; one is 16-inch and reduces to 12-inch, the other is 6-inch and increases to 8-inch. Two scenarios were modeled for Project 18: 16-inch water main on US 41 and 20-inch water on US 41. In both cases, all water mains from Lynch Road north to St. George would be replaced with a single main. **Table 3** below summarizes the differences between the replacement scenarios and the existing conditions.

Table 3. US 41 and Lynch Road Model Results

	Existing	16-inch	16-inch
Average Static Pressure AD (psi)	67.3	67.2	67.2
Total Available Fire Flow AD (gpm)	4,632,475	4,700,810	4,700,910
Average Static Pressure MD (psi)	66.6	66.7	66.6
Total Available Fire Flow MD (gpm)	4,584,464	4,652,987	4,653,122

Based on the model results, both sizes provide improved fire flows and the 20-inch does not provide significantly better results than the 16-inch. Therefore 16-inch is the recommended size for main replacement.

Project 19 – Bexley Court, East of Oak Hill

Project 19 includes the replacement of existing 4-inch and 2-inch water main. No modeling was done for Project 19. The existing water main will be replaced with an 8-inch main up to the last hydrant to provide sufficient fire flows for the residential area served and then the main may reduce to 4-inch from the last hydrant to the dead-end.

Project 20 – Senate Avenue, Petersburg to Kentucky & St. George

Project 20 includes the replacement of existing 4-inch, 6-inch, 8-inch and 12-inch water mains. Two scenarios were modeled for Project 20: 12-inch water main on Senate Avenue and 16-inch water on Senate. All other water mains included in the project would be replaced with 8-inch to provide sufficient fire flows the residential areas served. **Table 4** below summarizes the differences between the replacement scenarios and the existing conditions. The total available fire flow in the table is sum of available fire flows in the entire distribution system.

Table 4. Senate Avenue, Petersburg to Kentucky & St. George Model Results

	Existing	12-inch	16-inch
Average Static Pressure AD (psi)	67.3	67.2	67.2
Total Available Fire Flow AD (gpm)	4,632,475	4,702,386	4,702,708
Average Static Pressure MD (psi)	66.6	66.6	66.6
Total Available Fire Flow MD (gpm)	4,584,464	4,654,623	4,654,955

Based on the model results, both sizes provide improved fire flows and the 16-inch does not provide significantly better results than the 12-inch. Therefore 12-inch is the recommended size for main replacement. A 12-inch main would also lessen the trench requirements compared to a 16-inch main in an already congested area along Senate Avenue.

Project 21 – First Avenue, Morgan to Booster Station

Project 21 includes the replacement of an existing 24-inch water main that feeds the existing First Avenue Booster Station. No modeling was done for Project 21. The existing water main will be replaced with a 36-inch main up to supply adequate flow to the existing First Avenue Booster Station. This project will connect to existing 36-inch mains that were already installed under Pigeon Creek and Diamond Avenue.

Project 22 – Morgan Avenue, Fares to Heidelbach

Project 22 includes the replacement of an existing 12-inch water main. No modeling was done for Project 22. The existing water main will be replaced with a 12-inch to connect existing 12-inch and 16-inch water mains and maintain the water distribution system grid approach.

Project 23 – Columbia – Phase I, Fares, Columbia to Morgan

Project 23 includes the replacement of existing 12-inch and 6-inch water main on Columbia Avenue, 12-inch water main on Fares Avenue, and 16-inch on Governor Street. Two scenarios were modeled for Project 23: 12-inch water main on Columbia Street and 16-inch water main on Columbia Street. 12-inch water main will be installed on Fares Avenue and 16-inch water main will be installed on Governor Street to connect to existing mains of the same size including recent projects on Stringtown Road and Fares Avenue. The total available fire flow in the table is sum of available fire flows in the entire distribution system.

Table 5. Columbia Phase I, Fares, Columbia to Morgan

	Existing	12-inch on Columbia	16-inch on Columbia
Average Static Pressure AD (psi)	67.3	67.3	67.3
Total Available Fire Flow AD (gpm)	4,632,475	4,750,174	4,750,705
Average Static Pressure MD (psi)	66.6	66.8	66.8
Total Available Fire Flow MD (gpm)	4,584,464	4,702,712	4,703,248

Based on the model results, both sizes provide improved fire flows and the 16-inch does not provide significantly better results than the 12-inch. Therefore 12-inch is the recommended size for main replacement.

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ATTACHMENT E

FINANCIAL INFORMATION FORM

Appendix Section Unique to Each Individual Project

See Individual Project for Financial Information Form

APPENDIX SECTION TO BE UPDATED
DRAFT DOCUMENTS UTILIZED AS PLACEHOLDERS

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ATTACHMENT F

PRELIMINARY DESIGN SUMMARY

Appendix Section Unique to Each Individual Project

See Individual Project for Financial Information Form

APPENDIX SECTION TO BE UPDATED
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WATER MAIN PROJECTS

Proposed 2019-2021 Water Main Replacement Projects - Current REFRESH Projects plus Highest Ranked Master Plan Projects

Average of Ranks used to determine project priority

Water Main Project Name	Estimated Construction Cost (2017 Dollars)	Estimated Design Costs (2017 Dollars)	Estimated Program Management Costs (2017 Dollars)	Estimated Construction Engineering and Resident Project Representative Costs (2017 Dollars)	Estimated Total Project Cost (2017 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year	Total LF	High Scoring Main	Average Score for Project	Rank By High Scoring Main	Rank by Average Score	Average of Ranks	High Score Explanation
President's Neighborhood Central	$3,174,000		$95,200	$304,700	$3,573,900	HNTB Estimate	2019	$3,905,300	9,300	231	194				Current project
President's Neighborhood West	$2,980,000		$89,400	$286,100	$3,355,500	HNTB Estimate	2019	$3,666,600	7,700	212	185				Current project
President's Neighborhood East	$1,167,000		$35,000	$112,000	$1,314,000	HNTB Estimate	2019	$1,435,800	3,400	207	180				Current project
Eichel, US 41 to Fares	$392,000		$11,800	$37,600	$441,400	HNTB Estimate	2019	$482,300	1,100	226	200				Current project
Walcott, West of Van Ness	$201,000		$6,000	$19,300	$226,300	HNTB Estimate	2019	$247,300	500	199	177				Current project
Washington and Second - Relocation	$1,385,000		$41,600	$133,000	$1,559,600	HNTB Estimate	2019	$1,704,200	2,300	194	190				Current project
Hogue Road, Red Bank to Williams	$1,944,000		$58,300	$186,600	$2,188,900	HNTB Estimate	2019	$2,391,900	8,500	202	176				Current project
New Harmony Road, Allens Lane to Harmony Way	$863,000		$25,900	$82,800	$971,700	HNTB Estimate	2019	$1,061,800	2,400	216	216				Current project
Harmony Way, Franklin Heights Neighborhood	$3,640,000		$109,200	$349,400	$4,098,600	HNTB Estimate	2019	$4,478,700	9,600	226	195				Current project
Sweetser Rotherwood Area	$4,567,000		$137,000	$438,400	$5,142,400	HNTB Estimate	2019	$5,619,200	15,800	201	186				Current project
Kansas Road, St. Petersburg to I-69 - Relocation	$2,585,000	$258,500	$77,600	$248,200	$3,169,300	HNTB Estimate	2019	$3,463,200	6,500	N/A	N/A				INDOT Relocation
Waterworks Road - (4) 30" Water Main Relocations	$4,250,000	$425,000	$127,500	$408,000	$5,210,500	HNTB Estimate	2019	$5,693,700	5,000	195	193	176	58	117	Effluent Pump Station, Age, Size
Road Project Relocations (unknown)	$2,455,200	$245,520	$73,700	$235,700	$3,010,120	HNTB Estimate	2019	$3,289,200	7,920	N/A	N/A				Road Project Relocations
Bartels Lane, Evergreen Road South	$580,000	$58,000	$17,400	$55,700	$711,100	HNTB Estimate	2020	$800,300	2,400	201	168				Current project
Ingle Ave, Forest to Marion	$346,000	$34,600	$10,400	$33,200	$424,200	HNTB Estimate	2020	$477,400	1,100	197	173				Current project
Fendrich Neighborhood	$2,077,000	$207,700	$62,300	$199,400	$2,546,400	HNTB Estimate	2020	$2,866,000	6,700	254	192				Current project
Stanley Ave, Governor to dead end east of Kerth	$1,186,000	$118,600	$35,600	$113,900	$1,454,100	HNTB Estimate	2020	$1,636,600	5,200	202	167				Current project
Kerth Avenue, St. George to Christ	$427,800	$42,780	$12,800	$41,100	$524,480	HNTB Estimate	2020	$590,300	1,380	254	201				Current project
Christ Rd - Extension Kerth to Fares	$100,000	$10,000	$3,000	$9,600	$122,600	HNTB Estimate	2020	$138,000	340	N/A	N/A				Current project
Allens Ln - Phase I	$887,000	$83,700	$26,100	$80,400	$1,026,200	HNTB Estimate	2020	$1,155,000	2,700	252	234	3	2	2.5	Road, Age, Material, Pressure
Grove Street, South of Allens Lane	$806,000	$80,600	$24,200	$77,400	$988,200	HNTB Estimate	2020	$1,112,200	2,600	236	236	7	1	4	Road, Age, Material, Location
Rosewood Drive, Weaver to Hermann and Karch Drive east of Hermann	$291,600	$29,140	$8,700	$28,000	$357,240	HNTB Estimate	2020	$402,100	940	244	214	5	12	8.5	Age, Material
Gayne Street, West of Van Ness	$434,000	$43,400	$13,000	$41,700	$532,100	HNTB Estimate	2020	$598,900	1,400	232	226	16	3	9.5	Age, Pressure, Material
Upper Mt Vernon - Phase I, Red Bank Road, and New Harmony Road	$5,146,000	$514,600	$154,400	$494,000	$6,309,000	HNTB Estimate	2020	$7,100,800	16,600	232	220	13	7	10	Age, Pressure, Material
Tupman Road, north of Upper Mt Vernon	$620,000	$62,000	$18,600	$59,500	$760,100	HNTB Estimate	2020	$855,500	2,000	231	215	17	10	13.5	Age, Pressure, Material
Road Project Relocations (unknown)	$2,455,200	$245,520	$73,700	$235,700	$3,010,120	HNTB Estimate	2020	$3,387,900	7,920	N/A	N/A				Road Project Relocations
Bellaire Road, Oak Hill to Weinbach	$260,400	$26,040	$7,800	$25,000	$319,240	HNTB Estimate	2020	$359,300	840	227	223	25	6	15.5	Age, Material
US 41 and Lynch Rd	$4,154,000	$415,400	$124,600	$398,800	$5,092,800	HNTB Estimate	2020	$5,732,000	13,400	254	201	2	32	17	Road, Breaks, Age, Material, Location
Schmitt Lane, east of Oak Hill	$372,000	$37,200	$11,200	$35,700	$456,100	HNTB Estimate	2020	$513,380	1,200	226	226	26	4	15	Age, Material
Whetstone Road, west of Oak Hill	$192,200	$19,220	$5,800	$18,500	$235,720	HNTB Estimate	2020	$265,300	620	226	225	30	5	17.5	Age, Material
Bexley Road, east of Oak Hill	$434,000	$43,400	$13,000	$41,700	$532,100	HNTB Estimate	2020	$598,900	1,400	224	213	32	13	22.5	Age, Pressure
New York Ave, Bayse to Riverside	$651,000	$65,100	$19,500	$62,500	$798,100	HNTB Estimate	2020	$898,300	2,100	222	219	40	8	24	Age, Material
Claremont, Bosse, and Craig Aves	$2,263,000	$226,300	$67,900	$217,200	$2,774,400	HNTB Estimate	2020	$3,122,600	7,300	226	205	28	24	26	Age, Pressure, Material
Charlotte and Russel Sts	$1,085,000	$108,500	$32,600	$104,200	$1,330,300	HNTB Estimate	2021	$1,542,200	3,500	226	202	29	27	28	Breaks, Age, Pressure
Peerless Road, Upper Mt Vernon to Moya	$1,550,000	$155,000	$46,500	$148,800	$1,900,300	HNTB Estimate	2021	$2,203,000	5,000	219	203	43	15	29	Location, Consequence of Failure
Morgan Ave, Fares to Garvin	$1,271,000	$127,100	$38,100	$122,000	$1,558,200	HNTB Estimate	2021	$1,806,400	4,100	223	201	34	30	32	Breaks, Age, Location
Neighborhood of Covert, Vann, Graham, and Hawthorne	$3,007,000	$300,700	$90,200	$288,700	$3,686,600	HNTB Estimate	2021	$4,273,800	9,700	236	195	8	57	32.5	Breaks, Age, Material
Senate Ave, Petersburg to Kentucky & St George	$3,038,000	$303,800	$91,100	$291,600	$3,724,500	HNTB Estimate	2021	$4,317,700	9,800	219	203	44	25	34.5	Age, Size
First Ave, Pigeon Creek to Booster Station	$2,374,600	$237,460	$71,200	$228,000	$2,911,260	HNTB Estimate	2021	$3,374,900	7,660	235	193	9	68	38.5	Breaks, Age, Size, Location, Booster Station
Lakeview Blvd, Harmony to Golfmoor	$558,000	$55,800	$16,700	$53,600	$684,100	HNTB Estimate	2020	$770,000	1,800	216	206	63	21	42	Age
Mesker Park - Phase I	$1,085,000	$108,500	$32,600	$104,200	$1,330,300	HNTB Estimate	2021	$1,542,200	3,500	226	194	31	61	46.5	Road, Age, Pressure
Speaker Rd, James Ave, Nolan Ave	$889,000	$89,900	$27,000	$86,300	$1,102,200	HNTB Estimate	2021	$1,277,800	2,900	212	205	71	22	46.5	Age, Pressure
Maryland Ave, Harmony to Wessel	$1,178,000	$117,800	$35,300	$113,100	$1,444,200	HNTB Estimate	2021	$1,674,200	3,800	217	200	62	35	48.5	Age
Covert Ave - Phase II and Wedge Ave	$1,209,000	$120,900	$36,300	$116,100	$1,482,300	HNTB Estimate	2021	$1,718,400	3,900	207	194	115	66	90.5	Age
Columbia - Phase I, Fares, Columbia to Morgan	$2,914,000	$291,400	$87,400	$279,700	$3,572,500	HNTB Estimate	2021	$4,141,500	9,400	207	191	106	85	95.5	Breaks, Age, Location
Schutte Road, Broadway to USI Tank	$1,643,000	$164,300	$49,300	$157,700	$2,014,300	HNTB Estimate	2021	$2,335,100	5,300	197	189	170	98	134	Secondary Feed to USI Tank
Evans Street & Louisiana	$434,000	$43,400	$13,000	$41,700	$532,100	HNTB Estimate	2021	$616,800	1,400	228	218	21	9	15	Age, Material
Road Project Relocations (unknown)	$2,455,200	$245,520	$73,700	$235,700	$3,010,120	HNTB Estimate	2021	$3,489,600	7,920	N/A	N/A				Road Project Relocations
Total of Projects	$77,937,800	$5,762,400	$2,338,100	$7,482,000	$93,519,500			$105,133,500	237,840						

Non-construction costs assumed to be the following:
- 10% Design Costs; No Design Costs for Projects designed in 2017 / 2018
- 3% Program Management Costs
- 9.6% Construction Engineer / Resident Project Representative Costs

Year	Total Cost	Total Lineal Feet	Total Miles
2019	$37,439,200	80,020	15.2
2020	$33,380,700	79,940	15.1
2021	$34,313,600	77,880	14.8
TOTAL	$105,133,500	237,840	45.0

ADDITIONAL DISTRIBUTION SYSTEM PROJECTS FOR CONSIDERATION

Additional Water Main Projects for Consideration - Next Highest Ranked Master Plan Projects
Highest Scoring Main >= 200 plus Average Score of Main >= 190

Average of Ranks used to determine project priority

Water Main Project Name	Estimated Construction Cost (2017 Dollars)	Estimated Design Costs (2017 Dollars)	Estimated Program Management Costs (2017 Dollars)	Estimated Construction Engineering and Resident Project Representative Costs (2017 Dollars)	Estimated Total Project Cost (2017 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year	Length	High Scoring Mains	Average Score 1st Project	Rank by High Scores	Rank by Average Score	Average of Ranks	High Score Explanation
(Potential) Covert Avenue - Relocation for Road Diet							2022								INDOT Relocation
Neighborhood of Buena Vista, 1st, and Pigeon Creek	$7,936,000	$793,600	$238,080	$761,856	$9,729,536	HNTB Estimate	2022	$11,617,600	25,600	262	203	1	26	13.5	Breaks, Age, Material
Division Street & Canal	$1,705,000	$170,500	$51,150	$163,680	$2,090,330	HNTB Estimate	2022	$2,496,000	5,500	220	197	41	49	45	Road, Age, Size, Location
Residential/Commercial area bound by Stringtown, US 41, Diamond, and Morgan	$5,549,000	$554,900	$166,470	$532,704	$6,803,074	HNTB Estimate	2022	$8,123,200	17,900	242	190	6	92	49	Road, Breaks, Age, Material, Location
First Ave, Booster to Reservoir, Campground Road to Petersburg	$5,983,000	$598,300	$179,490	$574,368	$7,335,158	HNTB Estimate	2022	$8,758,600	19,300	223	194	35	64	49.5	Age, Pressure, Material, Size
Lloyd Expressway, Wabash to Tekoppel	$3,689,000	$368,900	$110,670	$354,144	$4,522,714	HNTB Estimate	2022	$5,400,400	11,900	232	191	14	86	50	Road, Breaks, Age, Pressure, Size, Location
E Morgan Ave and Old Boonville Hwy	$2,759,000	$275,900	$82,770	$264,864	$3,382,534	HNTB Estimate	2022	$4,038,900	8,900	218	196	47	54	50.5	Road, Age, Location
St George - Phase II	$3,441,000	$344,100	$103,230	$330,336	$4,218,666	HNTB Estimate	2022	$5,037,300	11,100	220	194	42	62	52	Road, Age, Size, Location
Green River - Phase I, Lloyd to Lincoln	$682,000	$68,200	$20,460	$65,472	$836,132	HNTB Estimate	2022	$998,400	2,200	209	209	88	16	52	Age
Division St, Vann to Stockwell	$465,000	$46,500	$13,950	$44,640	$570,090	HNTB Estimate	2022	$680,700	1,500	209	209	91	14	52.5	Road, Age, Location
Franklin Ave and Illinois east of Pigeon Creek	$961,000	$96,100	$28,830	$92,256	$1,178,186	HNTB Estimate	2022	$1,406,800	3,100	209	207	89	18	53.5	Age, Location
9th Ave, Franklin St, and Michigan St	$3,596,000	$359,600	$107,880	$345,216	$4,408,696	HNTB Estimate	2022	$5,264,200	11,600	210	201	81	29	55	Road, Age, Size, Location
Ohio Street, West of Pigeon Creek to St Joseph	$1,178,000	$117,800	$35,340	$113,088	$1,444,228	HNTB Estimate	2022	$1,724,500	3,800	208	206	94	19	56.5	Age, Location
Washington Ave - Phase I	$1,736,000	$173,600	$52,080	$166,656	$2,128,336	HNTB Estimate	2022	$2,541,300	5,600	213	198	69	47	58	Road, Age, Location
Washington Ave - Phase II	$2,170,000	$217,000	$65,100	$208,320	$2,660,420	HNTB Estimate	2022	$3,176,700	7,000	218	193	46	72	59	Breaks, Age
Illinois Street, Governor to Morton	$403,000	$40,300	$12,090	$38,688	$494,078	HNTB Estimate	2022	$590,000	1,300	208	208	102	17	59.5	Age, Location
Stockwell Road, Indiana to Morgan	$1,395,000	$139,500	$41,850	$133,920	$1,710,270	HNTB Estimate	2022	$2,042,200	4,500	208	205	99	23	61	Age, Location
Virginia Ave and Oak Hill Rd east of US 41	$2,077,000	$207,700	$62,310	$199,392	$2,546,402	HNTB Estimate	2022	$3,040,500	6,700	210	199	82	40	61	Road, Age, Size, Location
Residential area on Idlewild and Allens west of 1st Ave	$2,790,000	$279,000	$83,700	$267,840	$3,420,540	HNTB Estimate	2022	$4,084,300	9,000	211	198	80	48	64	Breaks, Age, Pressure
Rollett Lane, south of Broadway	$465,000	$46,500	$13,950	$44,640	$570,090	HNTB Estimate	2022	$680,700	1,500	210	198	87	42	64.5	Age, Pressure
Grove St and Florida St	$651,000	$65,100	$19,530	$62,496	$798,126	HNTB Estimate	2022	$953,000	2,100	208	200	97	34	65.5	Age, Location
Maryland Ave and Buchanan Road	$3,410,000	$341,000	$102,300	$327,360	$4,180,660	HNTB Estimate	2022	$4,991,900	11,000	208	199	96	37	66.5	Age, Location
Big Cynthiana - Phase I	$1,023,000	$102,300	$30,690	$98,208	$1,254,198	HNTB Estimate	2022	$1,497,600	3,300	206	206	116	20	68	Age, Material
SR57 north of Kansas Rd	$527,000	$52,700	$15,810	$50,592	$646,102	HNTB Estimate	2022	$771,500	1,700	208	199	103	39	71	Pressure, Location
Park St, Florida to Shanklin	$434,000	$43,400	$13,020	$41,664	$532,084	HNTB Estimate	2022	$635,300	1,400	207	199	105	38	71.5	Age, Location
Mill - Phase I	$1,209,000	$120,900	$36,270	$116,064	$1,482,234	HNTB Estimate	2022	$1,769,800	3,900	210	195	85	59	72	Age
Morton Ave and Franklin St	$868,000	$86,800	$26,040	$83,328	$1,064,168	HNTB Estimate	2022	$1,270,700	2,800	207	198	104	46	75	Age, Location
Elliot and Morton Ave	$775,000	$77,500	$23,250	$74,400	$950,150	HNTB Estimate	2022	$1,134,500	2,500	216	190	64	87	75.5	Age
Broadway Ave - Phase II	$2,604,000	$260,400	$78,120	$249,984	$3,192,504	HNTB Estimate	2022	$3,812,000	8,400	208	195	95	59	77	Age, Location
Mount Vernon Rd, Upper Mt Vernon to Michigan	$3,565,000	$356,500	$106,950	$342,240	$4,370,690	HNTB Estimate	2022	$5,218,800	11,500	211	192	79	83	81	Age
Harmony - Phase II	$806,000	$80,600	$24,180	$77,376	$988,156	HNTB Estimate	2022	$1,179,900	2,600	206	198	121	41	81	Age
St Joseph, Wyoming to Glenview	$961,000	$96,100	$28,830	$92,256	$1,178,186	HNTB Estimate	2022	$1,406,800	3,100	205	198	119	43	81	Age
Broadway Ave - Phase III	$3,968,000	$396,800	$119,040	$380,928	$4,864,768	HNTB Estimate	2022	$5,808,800	12,800	210	191	84	84	84	Age, Pressure
Wills Rd, Virginia to Michigan	$93,000	$9,300	$2,790	$8,928	$114,018	HNTB Estimate	2022	$136,100	300	202	202	140	28	84	Age
Downtown area on 1st Ave and 2nd Ave	$3,875,000	$387,500	$116,250	$372,000	$4,750,750	HNTB Estimate	2022	$5,572,500	12,500	207	193	107	67	87	Age
Petersburg Rd and US 41	$7,099,000	$709,900	$212,970	$681,504	$8,703,374	HNTB Estimate	2022	$10,392,300	22,900	208	192	101	75	88	Road, Pressure, Size, Location
Willemette Rd, south of Diamond	$43,400	$4,340	$1,302	$4,166	$53,208	HNTB Estimate	2022	$63,500	140	201	201	151	31	91	Road, Location
Cross Pointe Blvd, Indiana to Eagle Creek	$288,300	$28,830	$8,649	$27,677	$353,456	HNTB Estimate	2022	$422,000	930	201	201	152	33	92.5	Road, Location, Consequence of Failure
Mesker Park - Phase II	$2,418,000	$241,800	$72,540	$232,128	$2,964,468	HNTB Estimate	2022	$3,539,700	7,800	202	197	132	53	92.5	Road, Age, Pressure, Location
Neighborhood of Crossgate, Fulton, Mill, and Kratzville	$1,705,000	$170,500	$51,150	$163,680	$2,090,330	HNTB Estimate	2022	$2,496,000	5,500	202	196	133	56	94.5	Age, Pressure
Main St, Wedeking to Richardt	$105,400	$10,540	$3,162	$10,118	$129,220	HNTB Estimate	2022	$154,300	340	201	198	149	44	96.5	Age, Material
Cass and Ridgway	$403,000	$40,300	$12,090	$38,688	$494,078	HNTB Estimate	2022	$590,000	1,300	206	192	122	73	97.5	Age
Martins Lane, Burkhardt to Newburgh	$2,635,000	$263,500	$79,050	$252,960	$3,230,510	HNTB Estimate	2022	$3,857,400	8,500	207	190	112	88	100	Age
Vann Ave, Graham to Covert	$2,108,000	$210,800	$63,240	$202,368	$2,584,408	HNTB Estimate	2022	$3,085,900	6,800	202	192	142	76	109	Age, Material
Total of Projects	$90,554,100	$9,055,410	$2,716,623	$8,693,194	$111,019,327			$132,562,800	292,110						
									55	miles					

Booster Station Master Plan Projects

Booster Station Project Name	Estimated Construction Cost (2017 Dollars)	Estimated Design Costs (2017 Dollars)	Estimated Construction Engineering and Resident Project Representative Costs (2017 Dollars)	Estimated Total Project Cost (2017 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year
Stallings Booster Station Culvert Replacement	$50,000	$5,000	$5,000	$60,000	HNTB Estimate	2019	$65,600
Stallings Booster Station Piping Replacement	$167,000	$16,700	$16,700	$200,400	HNTB Estimate	2019	$219,000
Campground Booster Station Improvements	$342,000	$34,200	$34,200	$410,400	HNTB Estimate	2020	$461,900
Lincoln Booster Station Replacement	$1,580,000	$158,000	$158,000	$1,896,000	HNTB Estimate	2020	$2,134,000
Total of Projects	$2,139,000	$213,900	$213,900	$2,566,800			$2,880,500

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TREATMENT PLANT PROJECTS - REQUIRED FOR CONTINUED SERVICE/IMMEDIATE NEEDS

Project Name	Estimated Construction Cost (2016 Dollars)	Estimated Non-Construction Costs (2016 Dollars)	Estimated Total Project Cost (2016 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year	Type
Replace MCCs/Switchgear/Transformers	$850,000	$170,000	$1,020,000	2016 Master Plan	2019	$1,115,000	Required for Service
Filter Backwash System - Replace Main In/Out of Floodwall to Tanks	$600,000	$120,000	$720,000	2016 Master Plan	2019	$787,000	Required for Service
Extend Existing Outfall Sewers	$500,000	$100,000	$600,000	HNTB Estimate	2019	$656,000	Required for Service
Line 36" Outfall #4 Sewer and Below Existing Filter Buildings	$80,000	$0	$80,000	2016 Master Plan	2019	$88,000	Required for Service
New 6.0 MG Clear well and HSP #4	$13,800,000	$2,760,000	$16,560,000	2016 Master Plan	2019	$18,096,000	Required for Service
Replace and Upgrade Main Plant Switchgear	$1,000,000	$200,000	$1,200,000	2016 Master Plan	2019	$1,312,000	Required for Service
Rehab/Repair North Secondary Sed Basin Structural Rehab	$500,000	$100,000	$600,000	HNTB Estimate	2019	$656,000	Required for Service
Transformer Switches (Allows Bypass of Main Switchgear)	$60,000	$12,000	$72,000	2016 Master Plan	2019	$79,000	Required for Service
Enclose Filters 13-20 at Gallery Access, Relocate 1.5MG Clearwell Vent (for Dehumidification Project)	$50,000	$10,000	$60,000	HNTB Estimate	2019	$66,000	Required for Service
Filters 13-20 Pipe Gallery Coating, Rehab, Replace (As Needed)	$100,000	$20,000	$120,000	2016 Master Plan	2019	$131,127	Required for Service
Flow Meters and Vaults for Transmission Mains (Four 30" and One 48")	$650,000	$130,000	$780,000	HNTB Estimate	2020	$877,897	Required for Service
Grout Injection to Repair Existing 6.5 MG Clearwell	$300,000	$60,000	$360,000	HNTB Estimate	2021	$418,000	Required for Service
Total of Projects	$18,490,000	$3,682,000	$22,172,000			$24,282,024	

2019	$22,986,127
2020	$877,897
2021	$418,000
TOTAL	$24,282,024

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TREATMENT PLANT PROJECTS - OPTION 1 - REHAB EXISTING PLANT FOR 5-10 ADDITIONAL YEARS OF CONTINUED SERVICE

Project Name	Estimated Construction Cost (2016 Dollars)	Estimated Non-Construction Costs (2016 Dollars)	Estimated Total Project Cost (2016 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year	Type
Coating LS Pump Station Exterior/Bridge/Interior	$130,000	$0	$130,000	2016 Master Plan	2019	$143,000	Pending WTP Decision
Coating LS Pump Station Piping and Equipment	$50,000	$0	$50,000	2016 Master Plan	2019	$55,000	Pending WTP Decision
Coating HS Pump Station No. 2 Piping and Equipment (Includes Lead Paint Abatement)	$195,000	$0	$195,000	2016 Master Plan	2019	$214,000	Pending WTP Decision
HSPS2 Rehab (Walls, Stairs, Platforms, Select Piping Replacement, Etc.)	$167,250	$33,450	$200,700	2016 Master Plan	2019	$220,000	Pending WTP Decision
36" DIP Between South Plant and North Plant 1.5 MG Clearwell	$375,000	$75,000	$450,000	2016 Master Plan	2019	$492,000	Pending WTP Decision
Filters 1-12 Membrane Retrofit (Lead Abatement, Coatings, Rehab, Demo)	$4,970,000	$994,000	$5,964,000	2016 Master Plan	2019	$6,518,000	Pending WTP Decision
Filter Backwash System - Replace Backup Fill Valve Actuator	$5,000	$0	$5,000	2016 Master Plan	2019	$6,000	Pending WTP Decision
Filter Backwash System - Maintain Vertical Turbine Backwash Pump	$10,000	$0	$10,000	HNTB Estimate	2019	$11,000	Pending WTP Decision
Demo and Replace Boiler Heating System (Includes Asbestos Insulation Demo)	$625,000	$125,000	$750,000	2016 Master Plan	2019	$820,000	Pending WTP Decision
Misc. Replacement of Piping, Flanges, Bolts/Nuts in LSPS	$15,000	$0	$15,000	2016 Master Plan	2019	$17,000	Pending WTP Decision
Sodium Chlorite Demo	$50,000	$10,000	$60,000	2016 Master Plan	2019	$66,000	Pending WTP Decision
Rehab North Sludge Station/Electrical Building	$55,000	$11,000	$66,000	2016 Master Plan	2020	$75,000	Pending WTP Decision
Rehab of South Sludge Pumps Station	$341,350	$68,270	$409,620	2016 Master Plan	2020	$462,000	Pending WTP Decision
Filters 1-20 Dehumidification Improvements	$93,750	$18,750	$112,500	2016 Master Plan	2020	$127,000	Pending WTP Decision
Filters 29-32 Dehumidification Improvements, Coatings, Rehab.	$128,750	$25,750	$154,500	2016 Master Plan	2020	$174,000	Pending WTP Decision
Coat all Headhouse Roof Support Members	$200,000	$0	$200,000	2016 Master Plan	2020	$226,000	Pending WTP Decision
Replace South Primary and Sec. Sed Basins 1 & 2 Equipment, Rehab Tanks, Electrical	$1,610,000	$322,000	$1,932,000	2016 Master Plan	2021	$2,240,000	Pending WTP Decision
Filters 21-28 Pipe Gallery Coating, Rehab, Replace (As Needed)	$60,000	$12,000	$72,000	2016 Master Plan	2021	$84,000	Pending WTP Decision
Filters 33-36 Dehumidification Improvements	$68,750	$0	$68,750	2016 Master Plan	2021	$80,000	Pending WTP Decision
Filter Backwash System - Reline Piping from Tanks to Filters	$400,000	$80,000	$480,000	2016 Master Plan	2021	$557,000	Pending WTP Decision
New Waste Stream Treatment and Residuals Handling Facility	$34,300,000	$6,860,000	$41,160,000	2016 Master Plan	2021	$47,716,000	Pending WTP Decision
Total of Projects	$43,849,850	$8,835,220	$52,465,070			$60,303,000	

2019	$8,562,000
2020	$1,064,000
2021	$50,677,000
TOTAL	$60,303,000

TREATMENT PLANT PROJECTS - OPTION 2 - NEW GWTP

Project Name	Estimated Construction Cost (2018 Dollars)	Estimated Non-Construction Costs (2018 Dollars)	Estimated Total Project Cost (2018 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year	Type
Property Acquisition - Well Field, Raw Water Mains, Treatment Plant Site	$860,000	$172,000	$1,032,000	HNTB Estimate	2020	$1,232,262	Pending WTP Decision
Raw Water Mains	$16,196,910	$3,239,382	$19,436,292	HNTB Estimate	2020	$23,207,949	Pending WTP Decision
Collector Wells	$9,000,000	$1,800,000	$10,800,000	HNTB Estimate	2020	$12,895,765	Pending WTP Decision
Water Treatment Plant							
Site Work and Residuals Pump Station	$3,000,000	$600,000	$3,600,000	HNTB Estimate	2020	$4,298,588	Pending WTP Decision
Treatment and Chemical Building Equipment	$14,300,000	$2,860,000	$17,160,000	HNTB Estimate	2020	$20,489,937	Pending WTP Decision
Treatment and Chemical Building Piping and Fittings	$6,400,000	$1,280,000	$7,680,000	HNTB Estimate	2020	$9,170,322	Pending WTP Decision
Yard Piping and Fittings	$2,600,000	$520,000	$3,120,000	HNTB Estimate	2020	$3,725,443	Pending WTP Decision
Concrete	$9,100,000	$1,820,000	$10,920,000	HNTB Estimate	2020	$13,039,051	Pending WTP Decision
Building Components	$2,400,000	$480,000	$2,880,000	HNTB Estimate	2020	$3,438,871	Pending WTP Decision
HVAC Components	$800,000	$160,000	$960,000	HNTB Estimate	2020	$1,146,290	Pending WTP Decision
Plumbing Components	$200,000	$40,000	$240,000	HNTB Estimate	2020	$286,573	Pending WTP Decision
Electrical Components	$3,400,000	$680,000	$4,080,000	HNTB Estimate	2020	$4,871,733	Pending WTP Decision
Instrumentation and Controls	$1,200,000	$240,000	$1,440,000	HNTB Estimate	2020	$1,719,435	Pending WTP Decision
Mobilization and Bonds (6% of Subtotal)	$5,556,553	$0	$5,556,553	HNTB Estimate	2020	$6,634,815	Pending WTP Decision
Contingency (20% of Subtotal)	$13,891,382	$0	$13,891,382	HNTB Estimate	2020	$16,587,037	Pending WTP Decision
Total of Projects	$88,044,845	$13,719,382	$101,764,227			$121,511,809	

2020	$121,511,809
TOTAL	$121,511,809

PROJECTS TO SUPPLY WHOLESALE USERS INCREASED DEMANDS

Pigeon County

Project Name	Estimated Construction Cost (2017 Dollars)	Estimated Non-Construction Costs (2017 Dollars)	Estimated Construction Engineering and Resident Project Representative Costs (2017 Dollars)	Estimated Total Project Cost (2017 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year	Estimated User Percent Responsible	Estimated User Cost Responsibility
Stallings Booster Station Replacement	$3,600,000	$360,000	$360,000	$4,320,000	HNTB Estimate	2021	$5,008,100	14%	$701,100
First Avenue, Pigeon Creek to Booster Station	$2,374,600	$237,460	$237,460	$2,849,520	HNTB Estimate	2021	$3,303,400	25%	$825,900
Shroeder Road to Volkman Tank - Extension	$1,040,000	$104,000	$104,000	$1,248,000	HNTB Estimate	2021	$1,446,800	25%	$361,700
Total of Projects	$7,014,600	$701,460	$701,460	$8,417,520			$9,758,300		$2,439,600

German Township - North Pressure Zone (existing feed)

Project Name	Estimated Construction Cost (2017 Dollars)	Estimated Non-Construction Costs (2017 Dollars)	Estimated Construction Engineering and Resident Project Representative Costs (2017 Dollars)	Estimated Total Project Cost (2017 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year	Estimated User Percent Responsible	Estimated User Cost Responsibility
Stallings Booster Station Replacement	$3,600,000	$360,000	$360,000	$4,320,000	HNTB Estimate	2021	$5,008,100	14%	$701,100
First Avenue Main Replacement - Pigeon Creek to Booster Station	$2,374,600	$474,920	$237,460	$3,086,980	HNTB Estimate	2021	$3,578,700	14%	$501,000
Total of Projects	$5,974,600	$1,194,920	$597,460	$7,766,980			$8,586,800		$1,202,100

German Township - Hillier Pressure Zone (Increased southward feed) Feed located at Creamery Road and Posey County Line Road)

Project Name	Estimated Construction Cost (2017 Dollars)	Estimated Non-Construction Costs (2017 Dollars)	Estimated Construction Engineering and Resident Project Representative Costs (2017 Dollars)	Estimated Total Project Cost (2017 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year	Estimated User Percent Responsible	Estimated User Cost Responsibility
Hillier Booster Station Replacement	$3,600,000	$360,000	$360,000	$4,320,000	HNTB Estimate	2021	$5,008,100	14%	$701,100
Middle Mt Vernon, Creamery Road, Posey County Line Road - Extension	$2,400,000	$240,000	$240,000	$2,880,000	HNTB Estimate	2021	$3,338,700	100%	$3,338,700
Peerless Road, Upper Mt Vernon to Moya	$1,550,000	$155,000	$155,000	$1,860,000	HNTB Estimate	2021	$2,156,200	50%	$1,078,100
Hogue Road - Phase III	$1,271,000	$127,100	$127,100	$1,525,200	HNTB Estimate	2021	$1,768,100	50%	$884,100
Peerless Road, Moye to Hogue	$2,914,000	$291,400	$291,400	$3,496,800	HNTB Estimate	2021	$4,053,700	50%	$2,026,900
Total of Projects	$11,635,000	$1,163,500	$1,163,500	$13,962,000			$16,185,700		$8,155,500

Warrick County (Including North Vanderburgh Industrial Park)

Project Name	Estimated Construction Cost (2017 Dollars)	Estimated Non-Construction Costs (2017 Dollars)	Estimated Construction Engineering and Resident Project Representative Costs (2017 Dollars)	Estimated Total Project Cost (2017 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year	Estimated User Percent Responsible	Estimated User Cost Responsibility
Stallings Booster Station Replacement	$3,600,000	$360,000	$360,000	$4,320,000	HNTB Estimate	2021	$5,008,100	14%	$701,100
Northern Pressure Zone Elevated Storage Tank	$2,500,000	$250,000	$250,000	$3,000,000	HNTB Estimate	2021	$3,477,800	12%	$417,300
First Avenue Main Replacement - Pigeon Creek to Booster Station	$2,374,600	$237,460	$237,460	$2,849,520	HNTB Estimate	2021	$3,303,400	14%	$462,500
Volkman Road / Seven Hills Road - Extension	$3,886,000	$388,600	$388,600	$4,663,200	HNTB Estimate	2021	$5,405,900	12%	$648,700
Total of Projects	$12,360,600	$1,236,060	$1,236,060	$14,832,720			$17,195,200		$2,229,600

Elberfeld

Project Name	Estimated Construction Cost (2017 Dollars)	Estimated Non-Construction Costs (2017 Dollars)	Estimated Construction Engineering and Resident Project Representative Costs (2017 Dollars)	Estimated Total Project Cost (2017 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year	Estimated User Percent Responsible	Estimated User Cost Responsibility
Stallings Booster Station Replacement	$3,600,000	$360,000	$360,000	$4,320,000	HNTB Estimate	2021	$5,008,100	1%	$50,100
Northern Pressure Zone Elevated Storage Tank	$2,500,000	$250,000	$250,000	$3,000,000	HNTB Estimate	2021	$3,477,800	2%	$69,600
First Avenue Main Replacement - Pigeon Creek to Booster Station	$2,374,600	$237,460	$237,460	$2,849,520	HNTB Estimate	2021	$3,303,400	1%	$33,000
Volkman Road / Seven Hills Road - Extension	$3,886,000	$388,600	$388,600	$4,663,200	HNTB Estimate	2021	$5,405,900	2%	$108,100
Total of Projects	$12,360,600	$1,236,060	$1,236,060	$14,832,720			$17,195,200		$260,800

Vanderburgh Industrial Park

Project Name	Estimated Construction Cost (2017 Dollars)	Estimated Non-Construction Costs (2017 Dollars)	Estimated Construction Engineering and Resident Project Representative Costs (2017 Dollars)	Estimated Total Project Cost (2017 Dollars)	Cost Source	Estimated Construction Year	Estimated Total Project Cost in Construction Year	Estimated User Percent Responsible	Estimated User Cost Responsibility
Stallings Booster Station Replacement	$3,600,000	$360,000	$360,000	$4,320,000	HNTB Estimate	2021	$5,008,100	9%	$450,700
Northern Pressure Zone Elevated Storage Tank	$2,500,000	$250,000	$250,000	$3,000,000	HNTB Estimate	2021	$3,477,800	14%	$486,900
First Avenue Main Replacement - Pigeon Creek to Booster Station	$2,374,600	$237,460	$237,460	$2,849,520	HNTB Estimate	2021	$3,303,400	9%	$297,300
Volkman Road / Seven Hills Road - Extension	$3,886,000	$388,600	$388,600	$4,663,200	HNTB Estimate	2021	$5,405,900	14%	$756,800
Total of Projects	$12,360,600	$1,236,060	$1,236,060	$14,832,720			$17,195,200		$1,991,700

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Date	1 Mo	3 Mo	6 Mo	1 Yr	2 Yr	3 Yr	5 Yr	7 Yr	10 Yr	20 Yr	30 Yr
07/02/18	1.90	1.98	2.14	2.34	2.57	2.65	2.75	2.83	2.87	2.92	2.99
07/03/18	1.91	1.98	2.12	2.33	2.53	2.63	2.72	2.79	2.83	2.89	2.96
07/05/18	1.87	1.96	2.11	2.32	2.55	2.65	2.74	2.80	2.84	2.88	2.95
07/06/18	1.86	1.97	2.13	2.34	2.53	2.64	2.71	2.78	2.82	2.87	2.94
07/09/18	1.87	1.98	2.15	2.34	2.57	2.66	2.75	2.82	2.86	2.90	2.96
07/10/18	1.88	1.99	2.15	2.36	2.59	2.69	2.77	2.83	2.87	2.91	2.97
07/11/18	1.89	1.97	2.14	2.36	2.58	2.67	2.74	2.82	2.85	2.89	2.95
07/12/18	1.89	1.98	2.17	2.39	2.60	2.68	2.75	2.83	2.85	2.89	2.95
07/13/18	1.87	1.98	2.16	2.37	2.59	2.66	2.73	2.80	2.83	2.87	2.94

* 30-year Treasury constant maturity series was discontinued on February 18, 2002 and reintroduced on February 9, 2006. From February 18, 2002 to February 8, 2006, Treasury published alternatives to a 30-year rate. See Long-Term Average Rate for more information.

Treasury discontinued the 20-year constant maturity series at the end of calendar year 1986 and reinstated that series on October 1, 1993. As a result, there are no 20-year rates available for the time period January 1, 1987 through September 30, 1993.

Treasury Yield Curve Rates. These rates are commonly referred to as "Constant Maturity Treasury" rates, or CMTs. Yields are interpolated by the Treasury from the daily yield curve. This curve, which relates the yield on a security to its time to maturity is based on the closing market bid yields on actively traded Treasury securities in the over-the-counter market. These market yields are calculated from composites of quotations obtained by the Federal Reserve Bank of New York. The yield values are read from the yield curve at fixed maturities, currently 1, 3 and 6 months and 1, 2, 3, 5, 7, 10, 20, and 30 years. This method provides a yield for a 10 year maturity, for example, even if no outstanding security has exactly 10 years remaining to maturity.

Treasury Yield Curve Methodology. The Treasury yield curve is estimated daily using a cubic spline model. Inputs to the model are primarily bid-side yields for on-the-run Treasury securities. See our Treasury Yield Curve Methodology page for details.

Negative Yields and Nominal Constant Maturity Treasury Series Rates (CMTs). Current financial market conditions, in conjunction with extraordinary low levels of interest rates, have resulted in negative yields for some Treasury securities trading in the secondary market. Negative yields for Treasury securities most often reflect highly technical factors in Treasury markets related to the cash and repurchase agreement markets, and are at times unrelated to the time value of money.

As such, Treasury will restrict the use of negative input yields for securities used in deriving interest rates for the Treasury nominal Constant Maturity Treasury series (CMTs). Any CMT input points with negative yields will be reset to zero percent prior to use as inputs in the CMT derivation. This decision is consistent with Treasury not accepting negative yields in Treasury nominal security auctions.

In addition, given that CMTs are used in many statutorily and regulatory determined loan and credit programs as well as for setting interest rates on non-marketable government securities, establishing a floor of zero more accurately reflects borrowing costs related to various programs.

For more information regarding these statistics contact the Office of Debt Management by email at debt.management@do.treas.gov.

AFFIRMATION

I affirm the representations I made in the foregoing testimony are true to the best of my knowledge, information, and belief.

By: Edward R. Kaufman
Cause No. 45073
Indiana Office of
Utility Consumer Counselor

7/20/2018
Date: