City of Fayetteville Staff Review Form

2020-0643

Legistar File ID

8/18/2020

City Council Meeting Date - Agenda Item Only
N/A for Non-Agenda Item

Andrea Foren	7/29/2020	PURCHASING (160)
Submitted By	**Submitted Date**	**Division / Department**

Action Recommendation:

A resolution approving an agreement for professional engineering services with Black & Veatch Corporation through RFQ 20-01, Engineering & Architect Services – Selection #10 for a water sewer rate study for the Fayetteville Water & Sewer System in an amount not to exceed $93,355 plus a project contingency in the amount of $18,600.

Budget Impact:

5400.720.1840.5314.00	Water/Sewer
Account Number	Fund
02064.1	Water & Sewer Rate/Operations Study
Project Number	Project Title

Budgeted Item?	Yes	Current Budget	$	368,463.00
		Funds Obligated	$	56,812.87
		Current Balance	**$**	**311,650.13**
Does item have a cost?	Yes	Item Cost	$	111,955.00
Budget Adjustment Attached?	No	Budget Adjustment		
		Remaining Budget	**$**	**199,695.13**

V20180321

Purchase Order Number: _____ **Previous Ordinance or Resolution #** _____

Change Order Number: _____ **Approval Date:** _____

Original Contract Number: _____

Comments:

CITY OF FAYETTEVILLE ARKANSAS

CITY COUNCIL MEMO

MEETING OF AUGUST 18, 2020

TO: Mayor and City Council

THRU: Paul A. Becker, Chief Financial Officer

FROM: Andrea Foren, Purchasing Manager

DATE: July 29, 2020

SUBJECT: **Professional engineering services agreement for a Water Sewer Rate Study**

RECOMMENDATION:
A resolution approving an agreement for professional engineering services with Black & Veatch Corporation through RFQ 20-01, Engineering & Architect Services – Selection #10 for a water sewer rate study for the Fayetteville Water & Sewer System in an amount not to exceed $93,355 plus a project contingency in the amount of $18,600.

BACKGROUND:
The last Comprehensive Water and Sewer Rate Study for the City was performed in 2008. Since that time the rates have provided adequate revenues to fund operational and capital needs for the system because a 3% annual increase had been incorporated in the rate structure and ordinance approved by the City Council.

DISCUSSION:
A new rate study is necessary due to the expanded Capital needs of the system as well as a need to reexamine the allocation of costs to correct user classifications based on a Cost of Service Rate Study by an experienced provider. Black and Veatch was selected as the most qualified vendor submitting a RFQ for this study by a City Selection Committee as required by City Ordinance as well as State Law .The need for this rate study and the proposal by Black & Vetch was discussed at the July 28 2020 Water & Sewer Committee and was approved for recommendation to the City Council for approval.

BUDGET/STAFF IMPACT:
There are sufficient funds budgeted in the Sewer and Water Fund for this service contract.

Attachments:
Contract for WS Rate Study, Black & Veatch

AGREEMENT
For
PROFESSIONAL ENGINEERING SERVICES FOR
A WATER AND SEWER RATE STUDY
Between
CITY OF FAYETTEVILLE, ARKANSAS
And
BLACK & VEATCH CORPORATION

THIS AGREEMENT is made as of August 18, 20 20, by and between City of Fayetteville, Arkansas, acting by and through its Mayor (hereinafter called CITY OF FAYETTEVILLE OR CITY) and Black & Veatch Corporation with its principal office located in Kansas City, Missouri (hereinafter called ENGINEER or BVC).

WHEREAS, CITY OF FAYETTEVILLE annually solicits statements of qualifications and BLACK AND VEATCH CORPORATION responded to RFQ 20-01 and was selected by committee.

WHEREAS, CITY OF FAYETTEVILLE from time to time requires professional engineering services in connection with the evaluation, planning, design, and/or construction administration of capital improvement projects. Therefore, CITY OF FAYETTEVILLE and BVC in consideration of their mutual covenants agree as follows:

BVC shall serve as CITY OF FAYETTEVILLE's professional engineering consultant in those assignments to which this Agreement applies and shall give consultation and advice to CITY OF FAYETTEVILLE during the performance of BVC's services. All services shall be performed under the direction of a professional engineer registered in the State of Arkansas and qualified in the particular field.

CITY OF FAYETTEVILLE and BVC agree in addition to this agreement, the following documents are hereby incorporated:

- Appendix A – Scope of Work and Fees
- Appendix B – Black and Veatch Corporation's response to RFQ 20-01
- Appendix C –Black and Veatch Corporation's Certificate of Insurance

SECTION 1 - AUTHORIZATION OF SERVICES

1.1 Services on any assignment shall be undertaken only upon written Authorization of CITY OF FAYETTEVILLE and agreement of BVC.

1.2 Assignments from CITY OF FAYETTEVILLE to BVC may include services described hereafter as Basic Services or as Additional Services of BVC.

1.3 Changes, modifications or amendments in scope, price or fees to this contract shall not be allowed without a formal contract amendment approved by the Mayor and the City Council in advance of the change in scope, costs, fees, or delivery schedule.

SECTION 2 - BASIC SERVICES OF ENGINEER

2.1 Perform professional design services in connection with the Project as hereinafter stated.

2.1.1 The Scope of Services to be furnished by ENGINEER during this project is included in APPENDIX A attached hereto and made part of this Agreement.

2.2 BVC shall coordinate their activities and services with the CITY OF FAYETTEVILLE. BVC and CITY OF FAYETTEVILLE agree that BVC has full responsibility for the engineering services.

SECTION 3 - RESPONSIBILITIES OF CITY OF FAYETTEVILLE

3.1 CITY OF FAYETTEVILLE shall, within a reasonable time, so as not to delay the services of BVC:

3.1.1 Provide full information as to CITY OF FAYETTEVILLE's requirements for the Project.

3.1.2 Assist BVC by placing at BVC's disposal all available information pertinent to the assignment including previous reports and any other data relative thereto.

3.1.3 Obtain for BVC access to property reasonably necessary for BVC to perform its services under this Agreement.

3.1.4 Examine all studies, reports, cost opinions, Drawings, proposals, and other documents presented by ENGINEER and render in writing decisions pertaining thereto.

3.1.5 The City's Chief Financial Officer is the CITY OF FAYETTEVILLE's project representative with respect to the services to be performed under this Agreement. Such person shall have complete authority to transmit instructions, receive information, interpret and define CITY OF FAYETTEVILLE's policies and decisions with respect to materials, equipment, elements and systems to be used in the Project, and other matters pertinent to the services covered by this Agreement.

3.1.6 CITY OF FAYETTEVILLE will review all documents and provide written comments to BVC in a timely manner.

SECTION 4 - PERIOD OF SERVICE

4.1 This Agreement will become effective upon the first written notice by CITY OF FAYETTEVILLE authorizing services hereunder after issuance of a Purchase Order signed by the Purchasing Manager.

4.2 The provisions of this Agreement have been agreed to in anticipation of the orderly progress of the Project through completion of the services stated in the Agreement. BVC will proceed with providing the authorized services immediately upon receipt of written authorization from CITY OF FAYETTEVILLE. Said authorization shall include the scope of the services authorized and the time in which the services are to be completed.

4.3 BVC shall provide a schedule of its services and include such schedule with the scope in APPENDIX A.

SECTION 5 - PAYMENTS TO ENGINEER

5.1 The maximum not-to-exceed amount authorized for this Agreement is $93,355.00 US Dollars.

5.2 The CITY OF FAYETTEVILLE shall compensate BVC based upon a unit price basis as described in APPENDIX A.

5.2.1 The maximum not-to-exceed amount authorized for this Agreement is based upon the estimated fee scope, hours, costs and expenses per phase. The estimated fee spreadsheets shall be included in APPENDIX A. The amount for any phase may be more or less than the estimate, however the maximum not-to-exceed amount shall not be exceeded without a formal contract amendment.

5.3 Statements

5.3.1 Monthly statements for each calendar month shall be submitted to CITY OF FAYETTEVILLE consistent with BVC's normal billing schedule. Once established, the billing schedule shall be maintained throughout the duration of the Project. Applications for payment shall be made in accordance with a format to be developed by BVC and approved by CITY OF FAYETTEVILLE. Applications for payment shall be accompanied each month by the updated project schedule. Final payment for professional services shall be made upon CITY OF FAYETTEVILLE's approval and acceptance with the satisfactory completion of the professional engineering services.

5.4 Payments

5.4.1 All statements are payable upon receipt and generally due within thirty (30) days. If a portion of BVC's statement is disputed by CITY OF FAYETTEVILLE, the undisputed portion shall be paid by CITY OF FAYETTEVILLE by the due date. CITY OF FAYETTEVILLE shall advise BVC in writing of the basis for any disputed portion of any statement. CITY OF FAYETTEVILLE will make reasonable effort to pay invoices within 30 days of date the invoice is approved, however, payment within 30 days is not guaranteed.

5.5 Final Payment

5.5.1 Upon satisfactory completion of the work performed under this Agreement, as a condition before final payment under this Agreement, or as a termination settlement under this Agreement, BVC shall execute and deliver to CITY OF FAYETTEVILLE a release of all claims against CITY OF FAYETTEVILLE arising under or by virtue of this Agreement, except claims which are specifically exempted by BVC to be set forth therein. Unless otherwise provided in this Agreement or by State law or otherwise expressly agreed to by the parties to this Agreement, final payment under this Agreement or settlement upon termination of this Agreement shall not constitute a waiver of CITY OF FAYETTEVILLE's claims against BVC.

SECTION 6 - GENERAL CONSIDERATIONS

6.1 Insurance

6.1.1 During the course of performance of these services, BVC will maintain (in United States Dollars) the insurance coverages as presented and listed in APPENDIX C.

BVC will provide to CITY OF FAYETTEVILLE certificates as evidence of the specified insurance, listing the CITY as an additional insured, within ten calendar days of the date of this Agreement and upon each renewal of coverage.

6.1.2 CITY OF FAYETTEVILLE and BVC waive all rights of subrogation against each other and their officers, directors, agents, or employees for damage covered by property insurance during and after the completion of BVC's services. A provision similar to this shall be incorporated into all construction contracts entered into by the CITY OF FAYETTEVILLE, and all construction contractors shall be required to provide waivers of subrogation in favor of CITY OF FAYETTEVILLE and BVC for damage covered by any construction contractor's property insurance.

6.2 Professional Responsibility

6.2.1 BVC will exercise reasonable skill, care, and diligence in the performance of BVC's services and will carry out its responsibilities in accordance with customarily accepted professional engineering practices, CITY OF FAYETTEVILLE Standards, Arkansas State Law and the Rules and regulations of the Arkansas Board of Licensure For Professional Engineers and Professional Surveyors. CITY OF FAYETTEVILLE will promptly report to BVC any defects or suspected defects in BVC's services of which CITY OF FAYETTEVILLE becomes aware, so that BVC can take measures to minimize the consequent of such defect. BVC agrees not to seek or accept any compensation or reimbursements from the CITY OF FAYETTEVILLE for engineering work it performs to correct any errors, omissions or other deficiencies caused by BVC's failure to meet customarily accepted professional engineering practices. This is BVC's sole obligation and guarantee and the CITY OF FAYETTEVILLE's exclusive remedy with the respect to the quality of the Services.

6.2.2 In addition, BVC will be responsible to CITY OF FAYETTEVILLE for damages caused by its negligent conduct during its activities at the Project Site to the extent covered by BVC's Commercial General Liability and Automobile Liability Insurance policies.

6.3 Cost Opinions and Projections

6.3.1 Cost opinions and projections prepared by BVC relating to construction costs and schedules, operation and maintenance costs, equipment characteristics and performance, and operating results are based on BVC's experience, qualifications, and judgment as a design professional. Since BVC has no control over weather, cost and availability of labor, material and equipment, labor productivity, construction Contractors' procedures and methods, unavoidable delays, construction Contractors' methods of determining prices, economic conditions, competitive bidding or market conditions, and other factors affecting such cost opinions or projections, BVC does not guarantee that actual rates, costs, performance, schedules, and related items will not vary from cost opinions and projections prepared by BVC.

6.4 Changes

6.4.1 CITY OF FAYETTEVILLE shall have the right to make changes within the general scope of BVC's services, with an appropriate change in compensation and schedule only after Fayetteville City Council approval of such proposed changes and, upon execution of a mutually acceptable amendment or change order signed by the Mayor of the CITY OF FAYETTEVILLE and the duly authorized officer of BVC.

6.5 Termination

6.5.1 This Agreement may be terminated in whole or in part in writing by either party in the event of substantial failure by the other party to fulfill its obligations under this Agreement through no fault of the terminating party, provided that no termination may be effected unless the other party is given:

6.5.1.1 Not less than ten (10) calendar days written notice (delivered by certified mail, return receipt requested) of intent to terminate,

6.5.1.2 An opportunity for consultation with the terminating party prior to termination.

6.5.2 This Agreement may be terminated in whole or in part in writing by CITY OF FAYETTEVILLE for its convenience, provided that BVC is given:

6.5.2.1 Not less than ten (10) calendar days written notice (delivered by certified mail, return receipt requested) of intent to terminate,

6.5.2.2 An opportunity for consultation with the terminating party prior to termination.

6.5.3 If termination for default is effected by CITY OF FAYETTEVILLE, an equitable adjustment in the price provided for in this Agreement shall be made, but

6.5.3.1 No amount shall be allowed for anticipated profit on unperformed services or other work,

6.5.3.2 Any payment due to BVC at the time of termination may be adjusted to cover any additional costs to CITY OF FAYETTEVILLE because of BVC's default.

6.5.4 If termination for default is effected by BVC, or if termination for convenience is effected by CITY OF FAYETTEVILLE, the equitable adjustment shall include a reasonable profit for services or other work performed. The equitable adjustment for any termination shall provide for payment to BVC for services rendered and expenses incurred prior to the termination, in addition to termination settlement costs reasonably incurred by BVC relating to commitments which had become firm prior to the termination.

6.5.5 Upon receipt of a termination action under Paragraphs 6.5.1 or 6.5.2 above, BVC shall:

6.5.5.1 Promptly discontinue all affected work (unless the notice directs otherwise),

6.5.5.2 Deliver or otherwise make available to CITY OF FAYETTEVILLE all data, drawings, specifications, reports, estimates, summaries and such other information and materials as may have been accumulated by BVC in performing this Agreement, whether completed or in process.

6.5.6 Upon termination under Paragraphs 6.5.1 or 6.5.2 above CITY OF FAYETTEVILLE may take over the work and may award another party an agreement to complete the work under this Agreement.

6.5.7 If, after termination for failure of BVC to fulfill contractual obligations, it is determined that BVC had not failed to fulfill contractual obligations, the termination shall be deemed to have been for the convenience of CITY OF FAYETTEVILLE. In such event, adjustments of the agreement price shall be made as provided in Paragraph 6.5.4 of this clause.

6.6 Delays

6.6.1 In the event the services of BVC are suspended or delayed by CITY OF FAYETTEVILLE or by other events beyond BVC's reasonable control, BVC shall be entitled to additional compensation and time for reasonable costs incurred by BVC in temporarily closing down or delaying the Project.

6.7 Rights and Benefits

6.7.1 BVC'S services will be performed solely for the benefit of CITY OF FAYETTEVILLE and not for the benefit of any other persons or entities.

6.8 Dispute Resolution

6.8.1 Scope of Paragraph: The procedures of this Paragraph shall apply to any and all disputes between CITY OF FAYETTEVILLE and BVC which arise from, or in any way are related to, this Agreement, including, but not limited to the interpretation of this Agreement, the enforcement of its terms, any acts, errors, or omissions of CITY OF FAYETTEVILLE or BVC in the performance of this Agreement, and disputes concerning payment.

6.8.2 Exhaustion of Remedies Required: No action may be filed unless the parties first negotiate. If timely Notice is given under Paragraph 6.8.3, but an action is initiated prior to exhaustion of these procedures, such action shall be stayed, upon application by either party to a court of proper jurisdiction, until the procedures in Paragraphs 6.8.3 and 6.8.4 have been complied with.

6.8.3 Notice of Dispute

6.8.3.1 For disputes arising prior to the making of final payment promptly after the occurrence of any incident, action, or failure to act upon which a claim is based, the party seeking relief shall serve the other party with a written Notice;

6.8.3.2 For disputes arising within one year after the making of final payment, CITY OF FAYETTEVILLE shall give BVC written Notice at the address listed in Paragraph 6.14 within thirty (30) days after occurrence of any incident, accident, or first observance of defect or damage. In both instances, the Notice shall specify the nature and amount of relief sought, the reason relief should be granted, and the appropriate portions of this Agreement that authorize the relief requested.

6.8.4 Negotiation: Within seven days of receipt of the Notice, the Project Managers for CITY OF FAYETTEVILLE and BVC shall confer in an effort to resolve the dispute. If the dispute cannot be resolved at that level, then, upon written request of either side, the matter shall be referred to the President of BVC and the Mayor of CITY OF FAYETTEVILLE or his designee. These officers shall meet at the Project Site or such other location as is agreed upon within 30 days of the written request to resolve the dispute.

6.9 CITY OF FAYETTEVILLE represents that it has sufficient funds or the means of obtaining funds to remit payment to BVC for services rendered by BVC.

6.10 Publications

6.10.1 Recognizing the importance of professional development on the part of BVC's employees and the importance of BVC's public relations, BVC may prepare publications, such as technical papers, articles for periodicals, and press releases, pertaining to BVC's services for the Project. Such publications will be provided to CITY OF FAYETTEVILLE in draft form for CITY OF FAYETTEVILLE's advance review. CITY OF FAYETTEVILLE shall review such drafts promptly and provide CITY OF FAYETTEVILLE's comments to BVC. CITY OF FAYETTEVILLE may require deletion of proprietary data or confidential information from such publications, but otherwise CITY OF FAYETTEVILLE will not unreasonably withhold approval. The cost of BVC's activities pertaining to any such publication shall be for BVC's account.

6.11 Indemnification

6.11.1 CITY OF FAYETTEVILLE agrees that it will require all construction Contractors to indemnify, defend, and hold harmless CITY OF FAYETTEVILLE and BVC from and against any and all loss where loss is caused or incurred or alleged to be caused or incurred in whole or in part as a result of the

negligence or other actionable fault of the Contractors, or their employees, agents, Subcontractors, and Suppliers.

6.12 Ownership of Documents

6.12.1 All documents provided by CITY OF FAYETTEVILLE including original drawings, disks of CADD drawings and cross sections, estimates, specification field notes, and data are and remain the property of CITY OF FAYETTEVILLE. BVC may retain reproduced copies of drawings and copies of other documents.

6.12.2 The CITY OF FAYETTEVILLE acknowledges the BVC's plans and specifications, including documents on electronic media ("delivered documents"), as instruments of professional services. Nevertheless, the delivered documents prepared under this Agreement shall be delivered to and become the property of the CITY OF FAYETTEVILLE upon completion of the services and payment in full of all monies due to BVC. Except for the BVC's services provided for by this Agreement as related to the construction and completion of the Project, the BVC accepts no liability arising from any reuse of the delivered documents by the CITY OF FAYETTEVILLE, unless BVC is retained by CITY OF FAYETTEVILLE to make modifications or otherwise reuse the delivered documents. Except where the CITY OF FAYETTEVILLE reuses the delivered documents subsequent to the completion of the Project, nothing contained in this paragraph shall alter the BVC's responsibilities and obligations under this Agreement.

6.12.3 Any files delivered in electronic medium may not work on systems and software different than those with which they were originally produced. BVC makes no warranty as to the compatibility of these files with any other system or software. Because of the potential degradation of electronic medium over time, in the event of a conflict between the sealed original drawings/hard copies and the electronic files, the sealed drawings/hard copies will govern.

6.13 Notices

6.13.1 Any Notice required under this Agreement will be in writing, addressed to the appropriate party at the following addresses:

CITY OF FAYETTEVILLE's address:
113 West Mountain
Fayetteville, AR 72701

BLACK AND VEATCH CORPORATION's address:
11401 Lamar Avenue
Overland Park, KS 66211

6.14 Successor and Assigns

6.14.1 CITY OF FAYETTEVILLE and BVC each binds himself and his successors, executors, administrators, and assigns to the other party of this Agreement and to the successors, executors, administrators, and assigns of such other party, in respect to all covenants of this Agreement; except as above, neither CITY OF FAYETTEVILLE nor BVC shall assign, sublet, or transfer his interest in the Agreement without the written consent of the other.

6.15 Controlling Law

6.15.1 This Agreement shall be subject to, interpreted and enforced according to the laws of the State of Arkansas without regard to any conflicts of law provisions.

6.16 Entire Agreement

6.16.1 This Agreement represents the entire Agreement between BVC and CITY OF FAYETTEVILLE relative to the Scope of Services herein. Since terms contained in purchase orders do not generally apply to professional services, in the event CITY OF FAYETTEVILLE issues to BVC a purchase order, no preprinted terms thereon shall become a part of this Agreement. Said purchase order document, whether or not signed by BVC, shall be considered as a document for CITY OF FAYETTEVILLE's internal management of its operations.

SECTION 7 - SPECIAL CONDITIONS

7.1 Additional Responsibilities of ENGINEER:

7.1.1 CITY OF FAYETTEVILLE's or any Federal or State Agency's review, approval, or acceptance of design drawings, specifications, reports and other services furnished hereunder shall not in any way relieve BVC of responsibility to its standard of care set forth in Section 6.2.1. Except as set forth in this Agreement, neither CITY OF FAYETTEVILLE's nor any Federal or State Agency's review, approval or acceptance of, nor payment for any of the services shall be construed as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement.

7.1.2 BVC shall be and shall remain liable, in accordance with applicable law, for direct third-party property and personal injury damages to CITY OF FAYETTEVILLE to the extent caused by BVC's negligent performance of the Services furnished under this Agreement; BVC shall not be liable for errors, omissions or other deficiencies to the extent attributable to CITY OF FAYETTEVILLE or CITY OF FAYETTEVILLE-furnished data.

7.1.3 In no event will BVC be liable for any special, indirect, or consequential damages including, without limitation, damages or losses in the nature of increased Project costs, loss of revenue or profit, lost production, claims by customers of OWNER, or governmental fines or penalties.

7.1.4 To the fullest extent permissible by law, and notwithstanding any other provision of this Agreement, the total liability, in the aggregate, of BVC, its officers, directors, shareholders, employees, agents, and consultants, and any of them, to CITY OF FAYETTEVILLE and anyone claiming by, through or under CITY OF FAYETTEVILLE, for any and all claims, losses, liabilities, costs or damages whatsoever arising out of, resulting from or in any way related to the Project or this Agreement from any form of negligence, professional errors or omissions (including breach of contract or warranty) of BVC, its officers, directors, employees, agents or consultants, or any of them, SHALL NOT EXCEED One Million Dollars ($1,000,000). The parties agree that specific consideration has been given by the BVC for this limitation and that it is deemed adequate.

7.2 Remedies

7.2.1 Except as may be otherwise provided in this Agreement, all claims, counter-claims, disputes and other matters in question between CITY OF FAYETTEVILLE and BVC arising out of or relating to this Agreement or the breach thereof will be decided in a court of competent jurisdiction within Arkansas.

7.3 Audit: Access to Records

7.3.1 BVC shall maintain books, records, documents and other evidence directly pertinent to performance on work under this Agreement and for three (3) years from the date of final payment under this Agreement, in accordance with generally accepted accounting principles and practices consistently applied in effect on the date of execution of this Agreement. BVC shall also maintain the financial information and data used by BVC in the preparation of support of the cost submission required for any negotiated agreement or change order and send to CITY OF FAYETTEVILLE a copy of the cost summary submitted. CITY OF FAYETTEVILLE, the State or any of their authorized representatives shall have access to all such books, records, documents and other evidence for the purpose of inspection, audit and copying during normal business hours. BVC will provide proper facilities for such access and inspection.

7.3.2 Records under Paragraph 7.3.1 above, shall be maintained and made available during performance on assisted work under this Agreement and until three years from the date of final payment for the project. In addition, those records which relate to any controversy arising out of such performance, or to costs or items to which an audit exception has been taken, shall be maintained and made available until three years after the date of resolution of such appeal, litigation, claim or exception.

7.3.3 This right of access clause (with respect to financial records) applies to:

7.3.3.1 Negotiated prime agreements:

7.3.3.2 Negotiated change orders or agreement amendments in excess of $10,000 affecting the price of any formally advertised, competitively awarded, fixed price agreement:

7.3.3.3 Agreements or purchase orders under any agreement other than a formally advertised, competitively awarded, fixed price agreement. However, this right of access does not apply to a prime agreement, lower tier subagreement or purchase order awarded after effective price competition, except:

7.3.3.3.1 With respect to record pertaining directly to subagreement performance, excluding any financial records of BVC;

7.3.3.3.2 If there is any indication that fraud, gross abuse or corrupt practices may be involved;

7.3.3.3.3 If the subagreement is terminated for default or for convenience.

7.4 Covenant Against Contingent Fees

7.4.1 BVC represents that no person or selling agency has been employed or retained to solicit or secure this Agreement upon an agreement of understanding for a commission, percentage, brokerage or continent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by BVC for the purpose of securing business. For breach or violation of this representation, CITY OF FAYETTEVILLE shall have the right to terminate this Agreement without liability or at its discretion, to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

7.5 Gratuities

7.5.1 If CITY OF FAYETTEVILLE finds after a notice and hearing that BVC or any of BVC's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts or otherwise) to any official, employee or agent of CITY OF FAYETTEVILLE, in an attempt to secure an agreement or favorable treatment in awarding, amending or making any determinations related to the performance of this Agreement, CITY OF FAYETTEVILLE may, by written notice to BVC terminate this Agreement. CITY OF FAYETTEVILLE may also pursue other rights and remedies that the law or this Agreement provides. However, the existence of the facts on which CITY OF FAYETTEVILLE bases such finding shall be in issue and may be reviewed in proceedings under the Remedies clause of this Agreement.

7.5.2 In the event this Agreement is terminated as provided in Paragraph 7.5.1, CITY OF FAYETTEVILLE may pursue the same remedies against BVC as it could pursue in the event of a breach of the Agreement by BVC.

7.6 Arkansas Freedom of Information Act

7.6.1 City contracts and documents, including internal documents and documents of subcontractors and sub-consultants, prepared while performing City contractual work are subject to the Arkansas Freedom of Information Act (FOIA). If a Freedom of Information Act request is presented to the CITY OF FAYETTEVILLE for records kept solely and only in the possession of BVC, to the extent required by law, BVC will provide the documents in a prompt and timely manner as prescribed in the Arkansas Freedom of Information Act (A.C.A. §25-19-101 et seq.). Only legally authorized photocopying costs pursuant to the FOIA may be assessed for this compliance.

7.6.2 Pursuant to Arkansas Code Ann. § 25-19-105(b)(20), the personal information of CITY OF FAYETTEVILLE water system customers must be treated as confidential information and shall not be made available for inspection except by BVC's employees as required to fulfill the terms of this Agreement. Upon completion of BVC's contractual duties and after approval of BVC's documents, the BVC agrees to destroy or return to CITY OF FAYETTEVILLE any copies of records containing information about CITY OF FAYETTEVILLE water system customers.

IN WITNESS WHEREOF, CITY OF FAYETTEVILLE, ARKANSAS by and through its Mayor, and BVC, by its authorized officer have made and executed this Agreement as of the day and year first above written.

CITY OF FAYETTEVILLE, ARKANSAS

By:_____
Mayor, Lioneld Jordan

ATTEST:
By:_____
Kara Paxton, City Clerk

BLACK & VEATCH CORPORATION

By: Deepa Poduval

KAR 7-13-2020
PM(White) 07/13/2020.

Title: Associate Vice President

END OF AGREEMENT FOR PROFESSIONAL ENGINEERING SERVICES

CITY OF FAYETTEVILLE, ARKANSAS

Water and Sewer Comprehensive Rate Study

TECHNICAL PROPOSAL | JULY 10, 2020

BLACK & VEATCH

Black & Veatch Corporation
11401 Lamar Avenue, Overland Park, KS 66211
P +1 913-458-2489 | E WelchRE@bv.com

July 10, 2020

City of Fayetteville
Ms. Andrea Foren
Purchasing Manager

RE: Water and Sewer Comprehensive Rate Study

Dear Ms. Foren:

As requested, Black & Veatch has prepared this proposal for a comprehensive water and sewer rate study ("Rate Study") for the City of Fayetteville. Included in this proposal is the scope of services, project team organization chart, project schedule, and proposed fee.

Ms. Anna White will be the Project Manager for this study and has 22 years of consulting experience in the water, sewer, and stormwater utility financial planning and cost of service rate studies. Ms. Prabha Kumar ,with 21 years of utility financial and business consulting expertise, will serve as the Project Director. Supporting them is a team of analysts with multi-disciplinary expertise and financial modeling experience. Each member of the Project Team was selected based on their experience in the various aspects required to complete this Rate Study successfully, and all embody our approach of **"Think. Plan. Do. Act."**

If you have any questions about our proposal, please contact Ms. Anna White at 913.458.3025 (WhiteAM@bv.com).

Robert E. Welch
Senior Vice President

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Scope of Services

The following sections present our proposed project methodology, project team, schedule, and fee. We look forward to the opportunity to discuss with the City of Fayetteville ("City") to further refine our scope of work, if necessary, and finalize a schedule that best meets your needs.

PROPOSED METHODOLOGY

The primary purpose of the study is to develop a 5-year financial plan and conduct a cost of service analysis along with a rates update, for the City's water and sewer systems.

Project Management

The project management task includes general project coordination, staff direction, budget/scope/schedule management, coordination with the City team for project-related activities, and billing/invoicing activities.

Task 1 – Project Initiation and Data Collection

This task will provide an opportunity to review project objectives and confirm scope of work, review project schedule and major milestones, collect pertinent data for the study, and discuss any relevant study needs. Specific subtasks are:

- Preliminary Data Request: Black & Veatch will prepare an initial request for financial and operational data and other pertinent information needs. A preliminary list of typical data which may be required for the study includes (not limited to):
  - Detailed operating and capital budgets pertaining to the water and sewer systems;
  - The most recent Capital Improvements Plan (CIP) schedule/costs, debt service schedules, and loan agreements;
  - Financial audited statements along with itemized revenues; and
  - Customer consumption and meter read data, and special wholesale billing information.
- Supplemental Data Request: After the initial meeting with utility staff, Black & Veatch will submit requests for additional data and clarifications of initial data received.

Task 2 – Financial Planning and Cost of Service

The primary purpose of this task is to develop a 5-year financial plan for 2021 through 2025 (forecast period). The necessary subtasks include the following:

2.1 Water and Sewer System Forecast of Operating Revenues

The focus of this task is to review the existing sources of operating revenues and the total annual revenue generation for the water and sewer systems. Key subtasks include:

- Bill Tabulation Analysis to determine the distribution of usage in each rate tier to compute usage revenues for 2020 and beyond, under existing rates;
- Projection of accounts by meter size and billed water usage for the forecast period, and projection of fixed and variable charge revenues under existing rates; and

- Projection of miscellaneous service revenues.

2.2 Forecast of Annual Revenue Requirements

Black & Veatch will develop the annual revenue requirements for the systems, considering multiple factors including budgeted Operation and Maintenance (O&M) expenditures; debt service on existing revenue bond issues and State Revolving Fund loans; proposed capital funding to support the projected capital program; debt service coverage, operating reserve and fund balance requirements; and any required transfers.

Additionally, we will review existing policies on reserve fund requirements and fund balances for adequacy.

2.3 Forecast Period Financial Plan

Black & Veatch will develop cash flow analyses for each system over the forecast period showing a comparison of revenue under existing rates with revenue requirements. As a part of the cash flow analyses, we will determine the annual revenue increases that may be necessary. The cash flow analyses will establish the basis to develop a sound financial plan over the forecast period and establish the target revenue to be utilized in performing the cost of service and rate design analyses.

2.4 Cost of Service Analysis

The objective of this task is to determine customer class cost of service responsibility for the systems. Key subtasks include:

- Determination of functional costs for the systems and allocation of each functional cost to cost-causative elements;
- Development of Units of Service associated with each cost causative element of the systems;
- Development of Unit Cost for each cost-causative component for the Test Year (2021);
- Distribution of Test Year Cost of Service to Customer Classes, and
- Comparison of Customer Class cost of service with the existing revenues to determine the extent of alignment and adjustments needed.

2.5 Rate Design Analysis

The objective of this task is to evaluate the existing rate structure and determine potential changes, if any, needed to assure equity of cost recovery within and among the various customer classes. Key factors that we will consider in rate structure review and potential changes include (i) nexus between costs incurred in providing service and the rates and charges that are designed to recover the costs of providing service; (ii) appropriate alignment between Base Charge and Volumetric Charge costs of service and revenues from those components; (iii) customer bill impact, (iv) and other objectives such as revenue stability, ease of administration, and revenue adequacy.

Black & Veatch will present a schedule of proposed rates for the Test Year and typical residential bill impact comparisons between the existing and proposed rates.

Task 3 – Meetings and Presentations

It is anticipated that three on-site meetings and two presentations will be held during the rate study. The meetings will be held with appropriate City staff and management. While these meetings will be

scheduled at significant stages of the study to receive project direction and review study progress, these sessions would also be used to discuss or review any study related issues and decisions. These meetings are important for providing appropriate consultant/client interaction, exchanging ideas, and developing recommendations tailored to meet the City's needs.

- **Meetings:** Up to three meetings will be held during the study. We recommend the following meetings with City and utility staff:
  - Review draft results from the revenue requirements to discuss the magnitude and timing of increases and the alternative scenarios that are developed and to affirm the key assumptions for the cost of service portion of the study.
  - Review and obtain feedback on the cost of service analysis and receive input on the City's rate design objectives.
  - Review and obtain feedback on the proposed rate schedules and typical bill analysis. A work session with the Water /Sewer Committee will be held the following day to present preliminary results of the study and solicit input.
- **Presentations:** Black & Veatch will participate in one presentation to the Water/Sewer Committee and one presentation to the City Council to summarize the findings of the rate study and recommendations.

If desired, the Black & Veatch team will support additional meetings as an added scope of work.

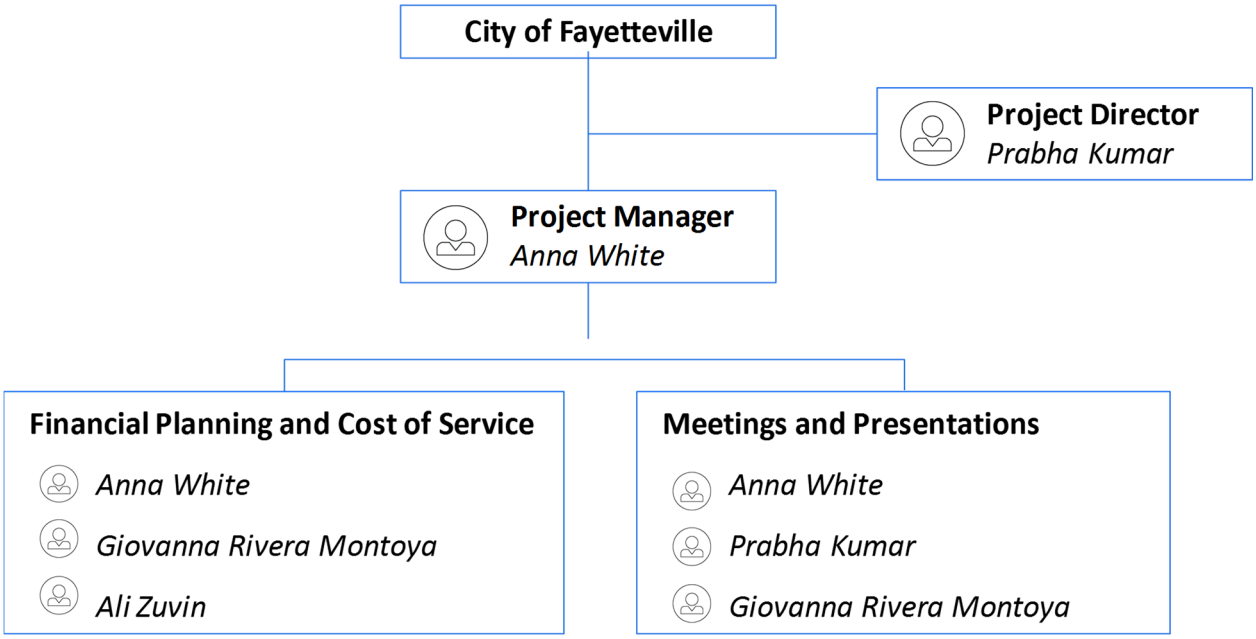
Task 4 – Rate Report

Black & Veatch will prepare a draft report that will include a discussion of all assumptions, study approach, summary of findings of the financial plan, results of the cost of service analysis, and proposed rate schedules. Following review of the draft report by City and utility staff, Black & Veatch will prepare a final report and deliver printed copies, as well as an electronic copy.

Project Team

Black & Veatch has assembled a highly experienced team of consultants with expertise in finance, management, cost of service and rate design to execute the diverse tasks in this rate study. Figure 1 presents the project team organization.

FIGURE 1 – PROJECT TEAM ORGANIZATION CHART



SUPPORT STAFF

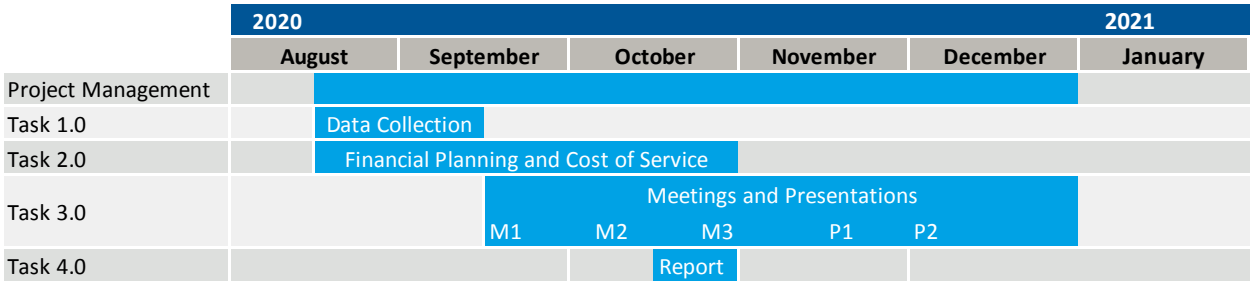
In addition to the team members indicated in Figure 1, we have other experienced staff engineers, financial and rate experts, and staff consultants with qualifications and experience in various aspects of financial advisory services including indirect cost allocation, impact fee analysis, wholesale cost of service, miscellaneous fee studies, and cost-benefit analysis. We will leverage our depth of Black & Veatch subject matter expertise and broad range of experience to support the project, assuring the City of the team's ability to successfully and effectively complete the proposed scope of services.

Project Schedule

Black & Veatch believes the proposed work plan presented in this section, meets the City's expectations; however, it can be adjusted to meet the City's specific needs as they may change during the rate study. A tentative work schedule for this engagement is shown in Figure 2. This schedule is not meant to be definitive; it can be adjusted accordingly, based on any additional needs or requirements. Black & Veatch expects to complete the scope of services within four months of the execution of a contract and issuance of notice-to-proceed.

Black & Veatch believes that we can meet the proposed schedule assuming we receive data and the City's feedback on deliverables, in a timely manner.

FIGURE **2 – PROJECT SCHEDULE**



Black & Veatch Project Work

Meetings and Presentations:

M1	Meeting #1 - Preliminary Review Revenue Requirements
M2	Meeting #2 - Results of Cost of Service, Proposed Rate Schedules
M3	Meeting #3 - Review Proposed Rates / Workshop with W&S Committee
P1	Presentation #1 - W&S Committee
P2	Presentation #2 - City Council

Project Fee

Black & Veatch will perform the services described in the Scope of Services section of this proposal based on the Billing Rate Schedule presented in Table 1. Based on those billing rates, which are effective through December 31, 2020, we estimate a total not-to-exceed contract amount of $93,355, which includes all direct expenses and fees.

TABLE 1 - BILLING RATE SCHEDULE

Job Description	Hourly Billing Rates ($/hr)
Senior Analyst	$215
Consultant	$240
Principal Consultant	$285
Director	$295

Table 2 presents a breakdown of the estimated fee, for each of the key tasks, associated with the scope of work.

TABLE 2 - WORK EFFORT AND FEE

Project Task	Fee
Task 0 - Project Management	$1,140
Task 1 - Project Initiation and Data Collection	$1,220
Task 2 - Financial Planning and Cost of Service	$51,125
Task 3 - Meetings and Presentations (Prep & Meetings)	$29,430
Task 4 - Study Report	$6,040
Direct Expenses	$4,400
TOTAL PROJECT FEE	**$93,355**

DISCLAIMER

It is understood that, upon notification of your award of the project to Black & Veatch Corporation ("Black & Veatch"), both parties agree to use reasonable diligence, to negotiate a mutually acceptable definitive written contract with respect to the work described in this proposal. Based on our experience we are reasonably confident that the contract terms can be negotiated quickly and without any effect on the project schedule. However, until we receive a fully executed, mutually acceptable definitive written contract, Black & Veatch will not perform any work on behalf of the City of Fayetteville related to the scope of work proposed herein.

Qualifications for
Engineering & Architectural Services

RFQ 20-01

City of Fayetteville, Arkansas

23 January 2020

BLACK & VEATCH

Black & Veatch Corporation
8400 Ward Parkway, Kansas City, MO 64114
P +1 913-458-3410 E HensonJ@bv.com

January 23, 2020

Les McGaugh
City of Fayetteville
Purchasing Division
113 W. Mountain, Room 306
Fayetteville, AR 72701

Dear Mr. McGaugh,

Black & Veatch appreciates the opportunity to share our Qualifications for Water and Wastewater services. With headquarters in Kansas City, our experts are located in the region and are eager and available to assist you. We have completed numerous projects that cover the range of services you may require and have identified a few for each subcategory to show you our experience.

We work with our clients to develop an approach and team specifically for the needs of each project. Our experience includes wastewater treatment projects ranging in size from 1 mgd to over 100 mgd of capacity including work at your Noland Wastewater Treatment Facility. Additionally, we recently performed a Water Audit and Strategic Water Loss Control Plan with your staff.

Our Statement of Qualifications is organized to provide the information in the order it is listed in your Request for Qualifications as shown below.

- Executive Summary
- Approach
- Experience
- Resumes
- Section B – Vendor References Form
- Section C – Signature Submittal
- Section E – 2019 Annual Statement of Qualifications Summary Form

We look forward to discussing potential project needs and sharing our approach to them with you. If you need any additional information or have any questions please contact Suzie (CarpenterS@bv.com, 913-458-6235) or Jeff (HensonJ@bv.com, 913-458-3410).

Very truly yours,
Black & Veatch Corporation

Jeff Henson
Associate Vice President

Suzenne Carpenter
Project Manager

Contents

Executive Summary

BLACK & VEATCH CORPORATION

Black & Veatch is one of the largest and most diversified engineering/ construction firms in the world. We provide a full range of engineering, procurement, and construction services in the infrastructure, electric power, and process fields. Since its establishment, Black & Veatch has been entrusted with more than 30,000 projects by more than 6,100 clients worldwide.

Founded in 1915 and headquartered in Kansas City, Missouri, Black & Veatch maintains more than 100 offices worldwide. We have a global staff of more than 10,000 employees involved in a wide range of disciplines, including environmental, civil, electrical, and mechanical engineering, as well as construction, science, economics, planning, and architecture personnel. Black & Veatch serves the diverse infrastructure, environmental, and civil engineering needs of government and industry through its Water Sector Business. Of 2,500 employees in the Water Sector, over 400 are located in the Kansas City headquarters office. We will serve the City of Fayetteville from our Kansas City office, which is within convenient driving distance. This staff has a proven track record winning more than 25 design awards over the last five years.

Types of Services for Which Firm is Qualified

While much of what we do can be considered environmental in nature, our capabilities extend far beyond what are typically considered to be environmental services. Through the Water Sector Business, we offer a complete range of planning, design, construction management, and design-build services encompassing:

- Water Supply, Treatment, and Distribution
- Wastewater Collection, Treatment, and Reuse
- Residuals Management and Beneficial Reuse
- Solid Waste Processing, Recycling, and Disposal
- Stormwater Management and Flood Control
- Environmental Information Management
- Locks, Dams, Reservoirs, and Irrigation
- Hydropower
- Marine Engineering, including. Port, Harbor, and River Works
- Roads, Bridges, and Advanced Transportation Technologies
- Military and Other Government Facilities
- Hazardous and Toxic Waste Management and Remediation

About Black & Veatch Water

At Black & Veatch, our project managers tailor every project to fit specific needs. The systems, processes and technologies that we recommend are the most appropriate for a client's individual needs and are based on a life cycle cost. Our reliable technology meets performance guarantees with measurable standards for cost and schedule. Clients rely upon our technologies for industry-best project execution and superlative risk management techniques as crucial to success.

Other doctrines that we follow on every project are listed below:

- **Design Approach/Philosophy** – Since 1915, Black & Veatch has specialized in water engineering and has developed a capability that is unmatched. We have no affiliation with any specific vendors or manufacturers and thus provide independent and honest recommendations that create the best value.
- **Resources** – Black & Veatch has more than 2,500 global water professionals. In the past decade we underwent a disciplined cultural transformation to transform the company into a globally integrated workforce. Led by Global Practice and Technology Leaders, Black & Veatch uses communities of practice, specialty practice leaders, technology leaders and subject matter experts from around the world to share knowledge throughout the company. More importantly, the knowledge of Black & Veatch Water experts is made available on demand to any Black & Veatch project manager anywhere in the world.
- **Design for Operations** – We never forget that the project does not end once design is finalized or even when a facility is constructed. For a project to be successful, the operators must be able to work with the system as intended without having to deal with operational difficulties or reliability issues. Thus, we have developed an approach to facility design that is operator-friendly, maximizing maintainability and operability while minimizing unnecessary complexity.
- **Beyond BIM: Black & Veatch BIM+ –** Building Information Modeling (BIM) is the process of creating and using digital models for design, construction and operation of projects. Over the last decade, Black & Veatch Water has customized a BIM process to support the unique design aspects of the water and wastewater industry. Black & Veatch's BIM+ approach combines the people, technology, and innovative design processes required to address each client's unique needs and concerns. BIM+ is fully integrated into the design process and the source of our design deliverables. This approach allows us to share and leverage information at each stage of a project, improving project quality and efficiency, reducing risk, and providing the best possible client and team experience.

2019 ENR Rankings
Multiple Categories

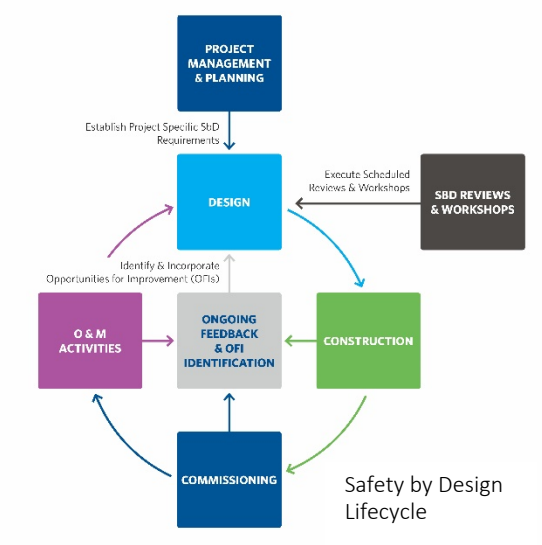
10 Top 500 Design Firms
11 Top 100 Design-Build Firms
14 Top 200 Environmental Firms
18 Top 100 Construction Management-for-Fee Firms
17 Top 50 Program Management Firms
139 Top 250 International Contractors
142 Top 250 Global Contractors

2019 ENR TOP 500
ENVIRONMENTAL FIRMS

6 Top 20 in Water Transmission Lines and Aqueducts
4 Top 50 in Water Supply
4 Top 25 in Sanitary and Storm Sewers
4 Top 25 in Wastewater Treatment Plants
4 Top 20 in Water Treatment & Desalination Plants
4 Top 50 in Sewer and Waste

These rankings attest not only to our industry standing but also to the fact that our designs work!

- **Safety by Design** – Black & Veatch is an industry leader in the consideration of design elements for enhanced operational safety of water utilities. Black & Veatch has assisted water utility clients in the implementation of its Prevention-through-Design (PtD) process since 2003. The Black & Veatch PtD process facilitates the systematic assessment of potential operational and maintenance (O&M) hazards and develops cost effective hazard mitigation plans during the design process, thereby decreasing the cost of operations and increasing the safety performance over the life of the project. Black & Veatch led AwwaRF Research Project 3104, "Integrating Worker Safety and Health into Water Utility Management, Operations, and New Facility Design."



Safety by Design Lifecycle

- **Sustainable Planning and Design** – Each step of the way, Black & Veatch is committed to evaluating planning and design decision making to provide energy-efficient and sustainable solutions that are justifiable across a "triple bottom line" of life cycle economics, people and the environment.

- **Stakeholder Partnerships** - We partner with all our stakeholders to deliver our services in an affordable way, with responsibility to the environment and the communities we serve. That list of communities is growing. In fact, an estimated 20% of the world's population served by community systems drinks potable water through systems designed constructed or supported by Black & Veatch.

Approach

The specific approach that we take for individual projects will depend on the work that is required. However, in general our macro level approach to all projects follows the same general procedures. This structure and conformance across project types allows Black & Veatch to consistently deliver high quality projects on time and on budget. The following paragraphs describe the approach that we take when planning and delivering a project.

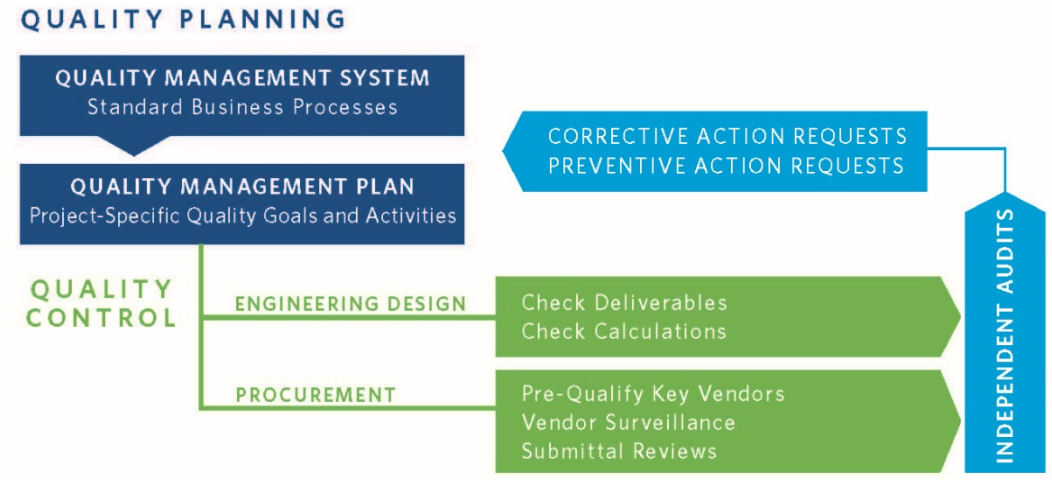
PROBLEM SOLVING APPROACH

The key to success is a thorough understanding of the project goals and objectives. The goals and objectives must be developed and confirmed at the initiation of the project and adhered to from the engineering services contract through resultant construction contracts.

Our approach is based on working closely with our clients to develop a balance between the quality of the project, the project schedule, and the overall project budget. Each of these elements is discussed further below:

QUALITY

Black & Veatch's QA/QC approach is a comprehensive program that controls quality in all project aspects. This quality program encompasses everyone on the project.



The Black & Veatch Team is committed to the concept that quality control begins with early planning and ends with completion of all contractual responsibilities. Quality represents an integral part of the overall management effort involving specific processes and monitoring tools. Our quality control process is continuous and proactive.

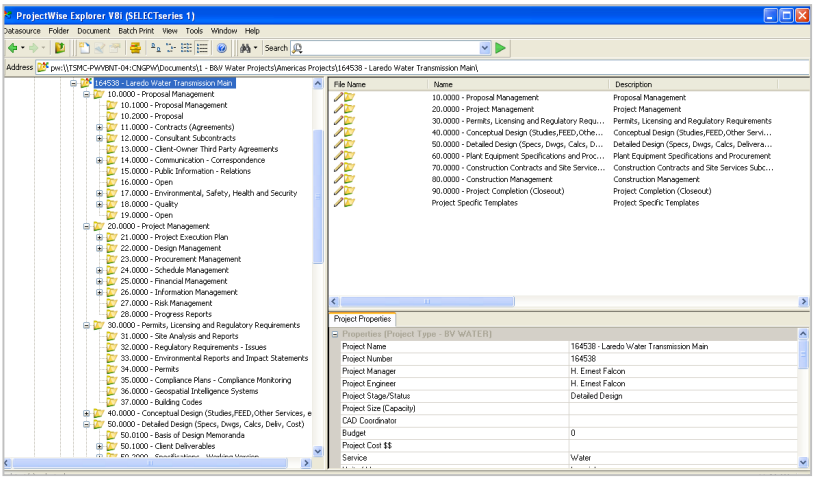
Commitment to Quality. Our engineering manager is responsible for coordinating the overall design and incorporating Black & Veatch's QA/QC policies and practices into the design documents. The industry average for change orders on municipal projects is approximately 5%. Change orders on Black & Veatch projects have consistently been well below the national average at about 1.5%. This is the result of our corporate commitment to quality.

Quality Control Starts with People. Black & Veatch's quality control policies, procedures and guidelines alone do not achieve our quality goals; people implementing these tools ultimately achieve quality goals.

Quality Assurance is a Continuous Process. Quality Assurance (QA) is continuously updated throughout the project with scheduled feedback to the project team. The Black & Veatch process of producing quality deliverables is focused on error prevention and not solely on error checking. QA procedures must be established at the start of each and every project. Therefore, we require that they be included as part of the Project Management Plan. This ensures that all team members and your staff involved in the project are on the same page at all times.

Schedule Control Procedures

It is our usual practice to develop a schedule in great detail with extensive task listings, staff hour estimates and associated milestone dates. Past experience has shown that detailed planning at the outset of the project provides the greatest opportunity for success in the end. The schedule will be the baseline. That is not to say it will remain unchanged throughout the life of the project. Schedules are, by nature, dynamic documents. The key to successful management of project schedules is to create them with built-in flexibility that allow for adjustments in scope or direction while still maintaining the key milestone dates.



Constant Communications

Black & Veatch understands and appreciates the need for timely and accurate communication with up to date status reports. The Project Manager is responsible for the project staying on schedule and within budget, while ensuring there are no surprises. The Project Principal will be actively engaged throughout project execution and work hand in hand with the Project Manager to achieve Total Client Satisfaction!

Project Controls

Black & Veatch recognizes the importance of managing communication, documents, schedule, quality and costs. We have in place proven project controls to address these issues.

Tools: ProjectWise. ProjectWise is Black & Veatch's web-based collaboration tool and is used for document control and project execution. ProjectWise consists of an internal and external component (Intranet server and Extranet server) for storage of project-related documents and design data.

Black & Veatch has a long history of providing high-quality professional engineering services to our clients. We continue to hone successful techniques and lessons learned to enhance the quality of our products. Quality design documents result in lower bid prices and minimize change orders.

Cost Control Procedures

Our number one goal for your project is Total Client Satisfaction. This requires the project team's commitment to achieving a quality project on schedule and within your budget guidelines. Meeting project budget requires careful planning and attention to detail on all project activities. The following are major activities used by our project team to help ensure your budget is met.

Trend System. The central component of our cost control plan is the trend system. A trend is any activity or change from the base plan that affects project cost or schedule. A trend log is developed at the outset of the project to record new ideas identified by any member of the project team. A trend analysis is then conducted to determine if the trend is to be incorporated into the project. The results of these analyses are recorded on the trend register, which summarizes all analyses and shows their impact on the project.

Engineering Services Cost Control. A monthly progress report will be prepared to compare actual progress against budgets used. Our project team will work very closely with your staff to define the level of service, material and equipment preferences, available budget and schedule proposed for the project. Constant vigilance and frequent communication are the best technique for controlling engineering costs.

Our Policy

Black & Veatch believes in freedom of opportunity for every individual to hold a job for which he or she qualifies on merit. It is our policy to recruit, hire, and promote individuals in all job classifications regardless of race, color, religion, age, sex, national origin, or presence of a handicap, except where age, sex, or absence of a handicap is a bona fide occupational qualification.

All personnel transactions, such as compensation, benefits, promotions, transfers, training, and tuition assistance, or any firm-sponsored activities, are administered regardless of race, color, religion, age, sex, national origin, or presence of a handicap, except where age, sex, or absence of a handicap is a bona fide occupational qualification.

Black & Veatch does not maintain segregated facilities nor will it assign employees to perform services at any location under its control where facilities are segregated.

The EEO Administrator conducts a monthly analysis of all personnel transactions to ensure equal opportunity, and reports it to Black & Veatch's CEO.

Experience

PROJECT TEAM

Fayetteville will benefit from Black & Veatch's committed leadership and a proven, national team of specialized experts.

The Black & Veatch team will be led by Suzie Carpenter as the proposed prime Project Manager, John Keller another Project Manager, and Jeff Henson as the Project Director. Suzie has 19 years of water experience, with the majority of her career focused on water and wastewater projects. In this capacity, she is actively involved in managing the study, design, and delivery of projects both regionally and nationally related to water and wastewater delivery and treatment. Suzie has recently worked with Fayetteville staff on a Water Audit and Strategic Water Loss Control Plan. John has 29 years of experience primarily in wastewater treatment plants and pumping stations. Supporting Suzie and John will be Jeff Henson, who will provide management support to ensure the team is delivering solutions Fayetteville requires. Together, this proven and local leadership team will deliver projects that exceed your expectations.

Black & Veatch is committed to providing Fayetteville local leadership and a proven national team in implementing water and wastewater projects. Your projects will directly benefit from the personal attention of our Project Manager, Suzie Carpenter, and her team of specialized task leaders, selected with close regard to delivering the relevant experience and expertise required by Fayetteville.

An organizational chart of key personnel is provided below, and an appendix including one page resumes for each person is at the end of the proposal.

CITY OF FAYETTEVILLE ARKANSAS

MANAGEMENT

PROJECT DIRECTOR
Jeff Henson, PE

PROJECT MANAGER
Suzie Carpenter, PE
John Keller, PE

WATER DISTRIBUTION	WASTEWATER COLLECTION	WASTEWATER TREATMENT	ADDITIONAL SERVICES
Greg Nelson, PE	Mark Funston, PE	Ed Kobylinski, PE	Bryan Dickerson
Mark Bushouse, PE	Alan Ringhausen, PE	James Barnard, PE, PhD	Pam Lemoine, PE
Andrew Hansen, PE	Robert Schweiger, PE	Gary Hunter, PE	Anna White
James Maher, PE	Karen Burgi, PE	Scott Carr, PE, BCEE	Kyle Lucas
Karen Burgi, PE	Rich Hayslett, PE	Derek Wurst, PE	
		Mark Steichen, PE	

PROJECT EXPERIENCE

The breadth of experience that Black & Veatch has as a company is expansive. This section illustrates recent experience that is directly applicable to the services that the City of Fayetteville provides its customers. The section focuses on experience in water distribution, wastewater collection, wastewater treatment, and additional services that we think might be applicable to your city.

WATER DISTRIBUTION SERVICES

Black & Veatch is *Building a World of Difference®* with expert planning and design for water conveyance and storage. In whatever technology or approach it takes to route, control, channel or store water, Black & Veatch offers you the knowledge and experience to make it successful. For nearly a century, we've built our leading reputation on 10,000 projects and nearly 12,000 miles of water, wastewater and stormwater conveyance worldwide.

Water Conveyance

Regardless of the contents being transported - raw water supplies, drinking water, hydroelectric generating flows or other fluids - our experts have the knowledge and experience to properly plan and design your system.

CONCRETE WATER TRANSMISSION MAIN CONDITION ASSESSMENT
City of Lawrence | Lawrence, Kansas

The project included a risk analysis to prioritize the prestressed concrete cylinder pipe (PCCP) transmission pipelines in the system, an evaluation of the inspection technologies and a review of common rehabilitation methods. The next step was to conduct the inspection and condition assessment of the top three high priority pipelines. The inspection plan identified the most cost-effective approach to gather the data required for the condition assessment.

- The inspection and condition assessment included 9,000 feet of 36-inch raw water main and 3,500 feet of 24-inch treated water transmission main.
- Inspection techniques included Electromagnetic and CCTV on a robotic platform that was inserted into the pipeline when out of service.

No significant defects were identified as a result of the inspection, allowing rehabilitation of the pipelines to be deferred and the funding to be utilized elsewhere.

Key Components
- Risk analysis/ prioritization
- Technology review
- Inspection planning
- Coordination with operations

Date Completed
August, 2014

Project Cost
Contracted Fee: $240K
Construction Cost: $40K (tap installation)

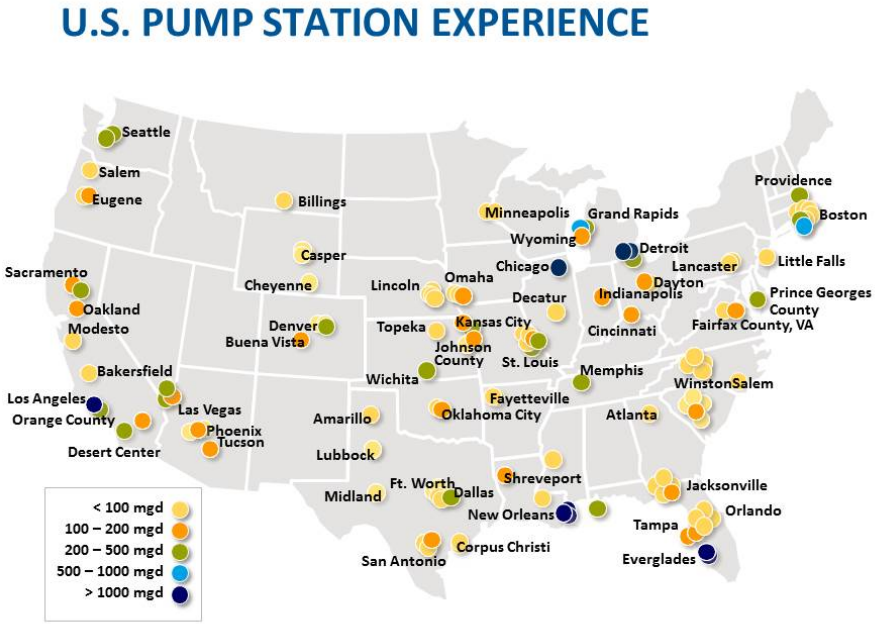
Client Reference
Andrew Ensz, Engineering Program Manager, P.O. Box 708 | Lawrence, KS 66044 785-832-7831

Pumping and Storage

Black & Veatch has worked on many of the world's largest pump stations, among them the most technically challenging and sensitive projects in the country.

Our pump and storage services include pump and lift station designs for raw water, treated water, wastewater and stormwater with a wide range of capacities.

Our designs include intakes and booster pump stations that resemble and are compatible with local aesthetics, each tailored to the particular capacity and head conditions of the project, with pumping equipment that ranges from horizontal centrifugal or split-case pumps to vertical turbine high-lift pumps.



Black & Veatch is not limited to the design of new facilities; we have provided rehabilitation/upgrading design services to numerous operating systems.

Our rehabilitation experience includes the modification, replacement and addition of equipment such as vertical turbine pumps, diesel engine and electric motor-operated pumps, horizontal centrifugal and split-case pumps, flowmetering equipment, and control and instrumentation facilities.

Black & Veatch has designed water storage structures ranging from small standpipes to major cast-in-place concrete storage reservoirs.

We have designed all types of water storage reservoirs, including elevated storage tanks; composite steel and concrete tanks; prestressed, precast, and cast-in-place ground storage reservoirs; and prestressed and cast-in-place concrete underground (or partially underground) water storage reservoirs.

YANKEE HILL PUMP STATION | LINCOLN, NEBRASKA

In response to growth in the Cheney Service Level and need for more resilient and reliable means of replenishing the service level, Black & Veatch teamed with Olsson Associates to design a new pump station next to the existing 10 MG Yankee Hill ground storage tank. The new pump station was designed for an initial total capacity of 7 MGD with provisions to expand the facility to a firm capacity of 18 MGD to meet 2060 anticipated demands.

Initial design capacity is met by one 1 MGD pump driven by an AFD, one constant speed 3 MGD pump, and one 3 MGD pump driven by an AFD. The facility was originally designed with provisions to accommodate a temporary generator, but was redesigned during construction to utilize a permanent generator sourced from Cheney Booster Pump Station. Design of the facility included coordination with LES to provide new electrical service and coordinating gear requirements for starting loads. YHPS was completed in 2018, to be online by late January with the generator relocation expected was completed in 2018.

KEY COMPONENTS

- Key Components:
- Hydraulic Design
- Pump Selection
- Electrical Service Coordination
- High Wind Resistance Design
- Bid Phase Services
- Construction Phase Services:

Date Completed
•2018

Project Cost
Construction Contract: $3,008,000

Client Reference
Lincoln Water System
Steve Owen
402-441-5925 | SOwen@Lincoln.ne.gov

LOMA LINDA ELEVATED STORAGE TANK | San Antonio Water System | San Antonio, Texas

Black & Veatch was selected as a sub-consultant to design the Loma Linda Elevated Storage Tank to provide service to the western portion of Pressure Zone 4. The 1.5-million gallon composite tank, surrounded by a residential subdivision, has a bowl diameter of 60 ft and a hydraulic head range of 35 ft. The site layout was specifically designed to consider setbacks for landscaping and security, drainage for overflow and future maintenance of the facility.

Project includes hydraulic analysis for alternative sites using the SAWS hydraulic model. Hydraulic analysis was used to provide design information for the approach main and control valves. Demolition of the existing Loma Linda tank was part of the project.

Appurtenances include an inlet/outlet pipe that is supported from the tank column, roof vents, access hatches and a rolling steel door for vehicle access into the support column. The support column houses the tank's altitude valve and associated piping, cathodic protection system and Programmable Logic Controller (PLC) designed by others. The PLC relays valve status, tank level information and security data to the Water Production Control Center main SCADA system.

Provisions for SCADA communications were made by installing a remote station UHF radio operating in the 900 MHz frequency band, antenna, lap top computer, and related appurtenances.

KEY COMPONENTS

- Engineering design
- Elevated Storage Tank
- Hydraulic Analysis
- Hydraulic analysis
- Demolition of existing tank

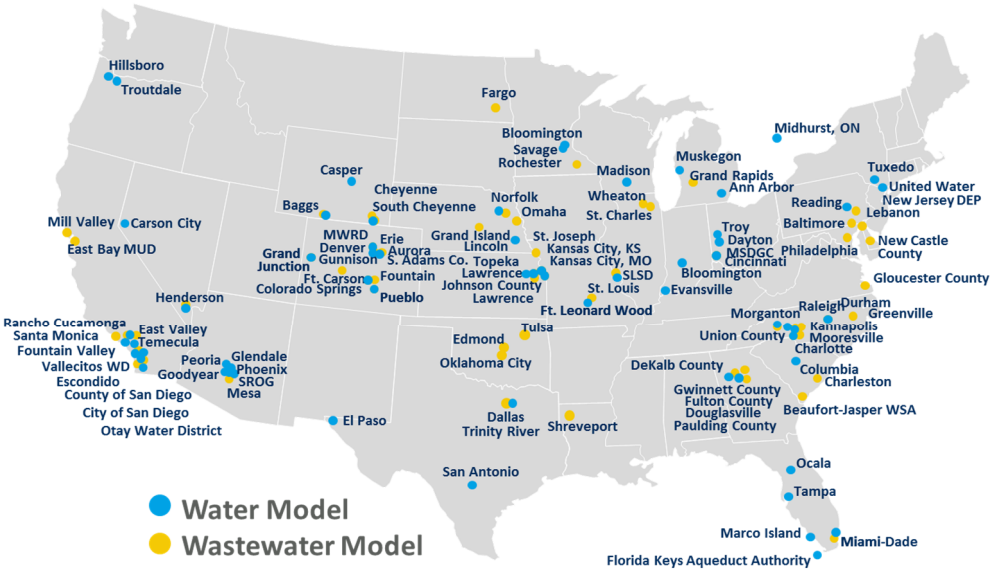
Date Completed
2013

Project Cost
Design Fee: $300,000 Total ($89,000 Black & Veatch)
Construction Value: $3M

Client Reference
Mr. Ashok Kaji, P.E.
Director, Facilities Engineering
2800 US Hwy. 281 North, Tower II, 4th Floor
San Antonio, TX 78212
210-233-3588

Distribution/Hydraulic Modeling

Our team has recently built, analyzed and assessed highly complex systems ranging from the Denver Water system in Colorado to the dispersed systems serving Palestine. We have built models and conducted extensive hydraulic analyses for regional systems covering the Phoenix metro area and detailed hydraulic models throughout Southern California's varying topography. We have used hydraulic models for numerous applications, including pressure and flow assessment; wild fire analyses; water quality assessment, reservoir circulation studies; facility sizing and siting; and hydraulic transient analysis. Our experience also includes developing software improvements, which have been adopted by firms like Innovyze.



Black & Veatch Hydraulic Modeling Experience

COMPREHENSIVE WATER SYSTEM MASTER PLAN UPDATE: DISTRIBUTION SYSTEM INFRASTRUCTURE EVALUATION | Water Services Division | Kansas City, Missouri

Black & Veatch (Black & Veatch) has been providing engineering services for Kansas City since 1910. This has included numerous water system studies and design of many water supply, treatment, and distribution facilities. In 2012, WSD retained Black & Veatch to conduct a Distribution System Infrastructure Evaluation as part of the Comprehensive Water System Master Plan Update project.

The Distribution System Infrastructure Evaluation used an industry-accepted approach to prioritize mains for replacement. The project used Black & Veatch's interactive Capital Improvement Planning (iCIP) tools which is a set of GIS-based buried infrastructure asset management tools and processes. Based on analysis of WSD's facility data, operational, and 43 years of break history the Probability of Failure risk was calculated for each pipeline and the Consequence of Failure risk was determined. The product of these two factors provide the overall Business Risk Exposure and justification for the replacement prioritization.

Black & Veatch also developed individual replacement projects based on the prioritized pipe segments to accommodate WSD's ability to execute and fund projects balanced against increasing risk.

KEY COMPONENTS

- Asset Management
- CIP Program
- GIS-based Analysis
- R&R Prioritization

Client Reference
Kelly Finn, Project Manager
4800 E. 63rd Street, Kansas City, MO 64130
816-513-0351

Date Completed
2017

Project Cost
Estimated: $1,760,000

WASTEWATER COLLECTION SERVICES

Major Interceptor Lines and Relief Sewer Systems

To plan for needed wastewater collection capital, and operations and maintenance improvement projects, a variety of services are available such as master planning, regulatory compliance plans, sewer overflow control technologies, maintenance management programs, rehabilitation programs, and pipeline and facility inspections. State-of-the-art tools such as geographical information systems (GIS) and computer modeling are used to ensure the accuracy and efficiency of each project.

SANITARY SEWER OVERFLOW ABATEMENT PROGRAM
City of Memphis | Memphis, Tennessee

The City of Memphis entered into a Sanitary Sewer Overflow Consent Decree with federal and state regulators in September of 2012. Black & Veatch was selected to perform Program Management and Construction Management services of the capital program needed to bring the City's wastewater and sewer system into compliance. The primary services to be performed by the Black & Veatch team at the program level include management, public relations & involvement, financial review, modeling and analyses, and regulatory reporting to ensure the City meets the Consent Decree compliance requirements.

The outlined objectives of the Program are consistent with the Consent Decree, and are summarized as follows:

- To assist the City in accordance with the terms of conditions of the contract, with compliance of the requirements of the Consent Decree.
- To upgrade the wastewater treatment facilities
- To eliminate sanitary sewer overflows in the sanitary distribution system.

Major Services to be Performed At The Program Level - In collaboration with several regional and local companies, the Black & Veatch team will procure the studies, design and construction services aimed at abating the sanitary sewer overflows (SSOs) that impact local waterways. The Consent Decree signed Sept. 21, 2012 between the City of Memphis, USEPA and other stakeholders defines the minimum requirements that the program must satisfy and provides the framework for the successful execution of the Program.

This is a $250 Million program over 10 years. It is structured as an initial $92M-4 year contract with the option of 3 (three) 2 year extensions (for a total of 10 years). The work includes condition assessments, CCTV inspections, data analysis and modeling, program management, procurement of design services and construction, construction management, public involvement, reporting.

Date Completed
Ongoing

Project Cost
Initial 4-year Contract: $92M
(Option of three 2-year extensions)

KEY COMPONENTS

- Major Interceptor Lines
- Sewage Pumping Stations
- Relief Sewer Systems
- Hydraulic Modeling
- Flow Monitoring

Client Reference
John E. Cameron, Dir. of City Engineering
125 North Main, Suite 668
Memphis TN, 38103
901-636-6700

Sewage Pumping Stations

Black & Veatch's extensive experience in wastewater pump station design and construction is illustrated in the following matrix. This is a sampling of pump stations which include a wide range of capacities and operating conditions. Our rehabilitation experience includes the modification, replacement and addition of equipment such as vertical turbine pumps, diesel engine and electric motor-operated pumps, horizontal centrifugal and split-case pumps, flow metering equipment, and control and instrumentation facilities.

Client	Pump Station	City	State	Pumping Capacity (mgd)
Hagerstown, City of	In-Plant Pump Station	Hagerstown	MD	37.5
Athens/Clarke County Public Utilities Department	Middle Oconee Water Reclamation Facility Influent Pump Station	Athens	GA	10.0
Aurora, City of	Piney Creek Wastewater Lift Station	Aurora	CO	16.0
Baton Rouge/East Baton Rouge	Pump Station 514	Baton Rouge	LA	77.0
Berthoud, Town of	New WWTP Influent Pump Station	Berthoud	CO	6.0
Board of Public Utilities	Central Industrial District Pump Station	Kansas City	KS	90.0
Brentwood Water Services	Brentwood Sewer Pump Station	Brentwood	TN	9.5
Charlotte-Mecklenburg Utilities	McDowell Creek WWTP Influent Pump Station	Charlotte	NC	60.0
Cheyenne Board of Public Utilities	Crow Creek Effluent Pump Station	Cheyenne	WY	4.0
City Water, Light and Power	Wastewater Pump Station	Springfield	IL	25.0
Clark County Sanitation District	Central WWTP Effluent Reuse Pump Station	Las Vegas	NV	32.0
Cobb County	Proctor Creek Influent Pump Station	Marietta	GA	42.0
Collierville, City of	NE WWTP 2nd Stage Influent Pump Station	Collierville	TN	6.0
Ennis, City of	Oak Grove WWTP Primary Pump Station	Ennis	TX	4.0
Fayetteville, City of	Paul R Noland WWTP Influent Pump Station	Fayetteville	AR	20.0
Garland, City of	Rowlett Creek WWTP Transfer Pump Station	Garland	TX	45.0
Glendale, City of	Glendale WWTP Influent Pump Station	Glendale	CO	0.4
Johnson County Wastewater	Blue River WWTP Influent Pump Station	Olathe	KS	37.0
Johnson County Wastewater	Indian Creek Middle Basin Wastewater Pump Station	Olathe	KS	20.0
Johnson County Wastewater	Tooley Creek Wastewater Pump Station	Olathe	KS	3.0
Kansas City, City of	87th Street Wastewater Pump Station	Kansas City	MO	160.0
Kansas City, City of	Birmingham WWTP Influent Pump Station	Kansas City	MO	80.0
Kansas City, City of	Line Creek Pump Station	Kansas City	MO	24.0
Ken-Caryl Ranch Water and Sanitation District	Lockheed Martin World Headquarters WW Lift Station	Littleton	CO	0.5
Kinston, City of	Forrest Street Lift Station	Kinston	NC	20.0
Lakeland, City of	West Lakeland WRF Effluent Pump Station	Lakeland	FL	5.3
Las Vegas Valley Water District	Desert Breeze Pump Station	Las Vegas	NV	10.0
Lawrence, City of	Four Seasons Complex Raw WW Pump Station	Lawrence	KS	18.5
Lawrence, City of	Lawrence WWTP Influent Pump Station	Lawrence	KS	60.0
Leavenworth, City of	Leavenworth WWTP Influent Pump Station	Leavenworth	KS	34.0
Leesburg, Town of	Leesburg Cattail Branch Pump Station	Leesburg	VA	9.0
Metro. Council of Environal Services	Eagles Point WWTP Influent Pump Station	St. Paul	MN	40.0
Met Sewer Dist of Greater Cincinnati	Lower Mill Creek Pump Station	Cincinnati	OH	84.0

Client	Pump Station	City	State	Pumping Capacity (mgd)
Metropolitan St. Louis Sewer District	Baumgartner WWTP Pump Station	St. Louis	MO	243.0
Metropolitan St. Louis Sewer District	Coldwater WWTP Pump Station	St. Louis	MO	165.0
Metropolitan St. Louis Sewer District	Lemay Pump Station No. 1	St. Louis	MO	288.0
Metropolitan St. Louis Sewer District	Lemay WWTP Raw WW Pump Station Expansion	St. Louis	MO	350.0
Olathe, City of	Cedar Creek WWTP Influent Pump Station	Olathe	KS	40.0
St. Joseph, City of	St Joseph CSO Stormwater Pump Station	St. Joseph	MO	108.0
Toledo, City of	Bay View WWTP Effluent Pump Station	Toledo	OH	265.0
Topeka, City of	Central Park Pump Station	Topeka	KS	11.5
Topeka, City of	North Topeka WWTP Effluent Pump Station	Topeka	KS	24.0

BUCKEYE PUMP STATION
Water Services Department | Kansas City, Missouri

Black & Veatch will replace an existing, 50-year old pumping station with a new 25 mgd dry-pit submersible pumping station, install a new 24 inch force main beneath the Missouri River, and rehabilitate the existing force main which parallels Missouri 210 Highway.

The objective of this project is to improve reliability of the pump station and force mains.

Black & Veatch has completed the first phase of the work which consisted of a study and conceptual design services, including a condition assessment of the existing pump station and ancillary systems; screening of rehabilitation or replacement alternatives; a desk-top evaluation of the existing Buckeye Creek Force Mains under the Missouri River and the North Bank Force Main; development of an inspection plan to identify force-main access points; and procedures and costs for future field inspection of the North Bank Force Main condition along with either rehab or replacement of the force main.

The second phase of the work by Black & Veatch requires the following:

- The design of a new Buckeye Creek pump station to be constructed on existing city property adjacent to the existing facility
- Field inspection and condition assessment of the existing North Bank Force Main
- Either rehabilitation or replacement of the North Bank Force Main
- Design of new replacement force mains under the Missouri River utilizing horizontal directional drilling installation methods.

Date Completed
Preliminary Design: June 2015
Design: 2016-2017
Construction: 2020-2023

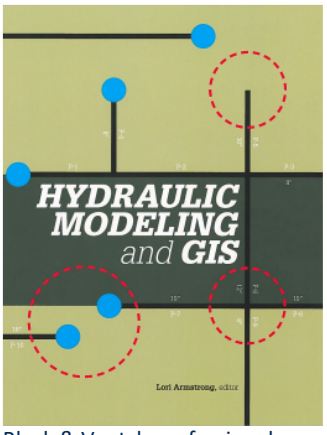
Project Cost
Construction Cost: $20M

KEY COMPONENTS
- Sewage Pumping Stations

Client Reference
Carla Bergman, Project Manager
4800 E 63rd St, Kansas City, MO 64130
816-513-0348

Hydraulic Modeling /Flow Monitoring

Hydraulic models are one of the most powerful tools available for agencies to evaluate their water and wastewater systems. Black & Veatch offers comprehensive hydraulic modeling services.



Black & Veatch professionals were primary authors of the ESRI publication *Hydraulic Modeling and GIS.*

Expertise. Black & Veatch has a dedicated hydraulic modeling group. This group is focused on delivering cutting edge approaches using the latest tools to solve our client's issues. Our team of modelers are experts in their field and are committed to a quality product for each client.

Software. Black & Veatch maintains enterprise licenses with major hydraulic model software vendors - meaning our solutions work around our client's needs, not what works best for us. We work closely with the vendors to help test and improve the software to fit our client's needs.

Solutions. Hydraulic models are incredibly valuable tools. Black & Veatch has used these tools to help clients solve problems in the following areas:

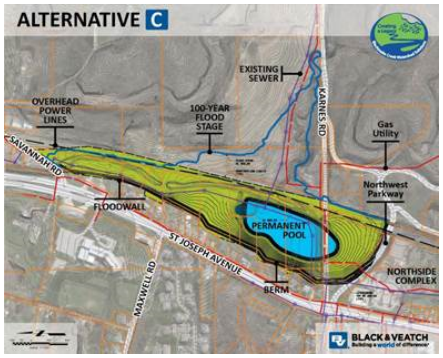
- CIP Development
- Energy Cost Savings
- Sewer Overflow Reduction
- Water Quality Analyses
- Source Water Blending Analyses Facility Operation Optimization (treatment, pumping, and storage)
- Operational Guidance
- Peak Flow Management
- Surge/Transient Analyses
- System Resiliency/Major Facility Outages
- Fire Flow Analysis
- New Facility Sizing and Integration
- Private Development Oversight

BLACKSNAKE CREEK STORMWATER SEPARATION IMPROVEMENT | CITY OF ST. JOSEPH | ST. JOSEPH, MISSOURI

The Blacksnake Creek Stormwater Separation Improvement is a comprehensive integrated project for the City of St. Joseph – a project that addresses public health, provides green solutions, and increases operational efficiency. The project will intercept and redirect Blacksnake Creek stream flows away from St. Joseph's combined sewer system to a new and dedicated stormwater conveyance system that flows to the Missouri River. Multiple alignments for redirecting the flows to the river are under investigation. Multiple detention alternatives were also evaluated which would provide a permanent pool for the community. Sewer overflows will be reduced while helping improve the water quality of the Missouri River.

Black & Veatch studied and designed multiple alignments to re-direct Blacksnake Creek flows from the Water Protection Facility to the Missouri River. This multifaceted project will provide multiple benefits to the community, including:

- Flood control and flood loss mitigation
- Revitalization of the St. Joseph Avenue residential and business corridor
- Traffic safety enhancements
- Reduction of the City's annual operating expenses
- Water quality improvements to the Missouri River
- Strategic investment for future cost reduction
- Alternative strategies to offset financial burdens to stakeholders



KEY COMPONENTS

- ✓ Relief Sewer Systems
- ✓ Hydraulic Modeling

Period of Services
Preliminary Design: 2014-2015
Design: 2015-2016
Construction: TBD

Project Cost
Design Fee: $11M
Construction Cost: $126M

Client Reference
Andy Clements, Public Works Director
1100 Frederick Ave. | St. Joseph, MO 64501
(816) 271-4653

PROGRAM MANAGEMENT OF THE SANITARY SEWER OVERFLOW CONTROL PROGRAM
City of Springfield | Springfield, Missouri

In May 2012 the City and MDNR entered into an Amended Consent Judgment which includes "Early Action" projects to be completed by 2018 and the development and implementation of a long-term Overflow Control Plan (OCP), which is to be completed by 2031. Black & Veatch assisted the City in direct negotiations with MDNR on the technical terms contained in the Amended Consent Judgment. Black & Veatch served as the Program Manager, leading an integrated program team consisting of City staff and B&V subconsultants.

"Early Action" projects were completed to upgrade, rehabilitate and enhance the capacity of the City's collection system to further eliminate I&I and SSOs. By 2018 the City completed various projects valued at approximately $50M.

The City will commit $200 million to reduce SSO and improve the environment over a 10 year period while deferring the commitment to a level of service for the system until more data is collected and system performance is evaluated. The approved OCP consists of three phases. The first phase includes Foundation Projects to be completed 2016 to 2020. These projects continue the significant investment in improving the sewer system and reducing overflows while addressing immediate biosolids digester needs at the SWTP. The second phase includes Advanced Action Plan (AAP) projects to be completed from 2021 to 2025. This phase continues the significant investment in I&I removal and sewer system upgrades, as well as providing needed improvements at the two WWTPs. Phase 3 will be for the period beyond 2025. The City is committed to a long-term, affordable plan to continue investing in system maintenance and I&I removal, as well as capacity improvements to achieve the proposed LOS.

Date Completed
Est. 2018

Project Cost
Contracted Fee: $16.6M
Construction Cost: $250M+

KEY COMPONENTS
- ✓ Hydraulic Modeling
- ✓ Flow Monitoring

Client Reference
Errin Kemper, Director
840 Boonville Ave. | Springfield, MO 65802
(417) 864-1910

WASTEWATER TREATMENT SERVICES

Black & Veatch is *Building a World of Difference*® with wastewater systems that serve your community efficiently while returning treated wastewater to the environment safely. With an eye to the future, Black & Veatch can help you turn wastewater into a valuable resource with water reclamation and reuse strategies. We employ state-of-the-art technologies to collect and pump water, treat wastewater to appropriate standards, manage residuals, remove nutrients and pre-treat industrial systems.

Facility Design—Wastewater treatment includes all aspects of liquid and solids processing, as well as effluent disposal for both municipal and industrial clients. Liquid and solids treatment services include master plans, feasibility studies, pilot plant studies, conceptual design, final design, bidding, construction management, startup and training, operations troubleshooting, and process and energy optimization. Key aspects of effluent disposal are reuse opportunities, as well as water quality issues with respect to nutrient requirements. Effluent disposal services include water quality modeling, load allocations, regulatory negotiations and permitting. Other services include vulnerability assessments, air quality modeling, and air permitting.

Municipal Process Design—Black & Veatch's global presence has allowed us to research and evaluate treatment technologies in all types of climates and weather conditions. Our process experts have performed extensive process development; process optimization and troubleshooting; preliminary and final design for primary, secondary and tertiary treatment; chemically enhanced pretreatment; ozonation; ultraviolet (UV) disinfection; aerobic and anaerobic digestion; nutrient removal; and odor/air emissions control. Selecting a treatment strategy for new and existing facilities requiring enhancement is driven by treatment objectives, existing facilities, site constraints, neighborhood, flexibility/ adaptability, and funding limitations. Advanced process options with which we have extensive experience include biological aerated filters (BAF), membrane bioreactor (MBR), moving bed biofilm reactor (MBBR), and integrated fixed-film activated sludge (IFAS).

Advanced Technologies—The challenge of treating and managing the biosolids produced at wastewater treatment plants increases every year, as many traditionally available outlets are affected by expanding regulations and public pressures. Black & Veatch has been on the forefront of biosolids management, from public review of the 40 CFR Part 503 regulations through the design and construction of a wide range of treatment technologies.

Because our experience includes all types of thickening, dewatering, stabilization and storage technologies, we can tailor an advanced biosolids solution to meet your needs.

Black & Veatch has provided services for nutrient removal projects throughout the world for both municipal and industrial clients, covering a broad range of nutrient removal requirements — nitrification only, upgrades to meet moderate nutrient control requirements, and nutrient removal to the limits of technology. Our projects

have included processes such as suspended growth, fixed-film, integrated fixed-film activated sludge, all in the 3 and 4, 5 stage configurations.

Regulatory Compliance—Black & Veatch helps clients meet regulatory compliance challenges, such as those involving effluent guidelines, sludge regulations, and local pretreatment programs as well as regional initiatives, stormwater and spill management including Best Management Practices (BMP), Pollution Prevention and SPCC Plans.

Residuals Management—Residuals resulting from wastewater treatment can be a costly problem for utilities. Black & Veatch has extensive experience providing residuals management solutions which is covered in the next section, Biosolids Management.

WAKARUSA WASTEWATER TREATMENT PLANT AND CONVEYANCE CORRIDOR
City Of Lawrence | Lawrence, Kansas

Black & Veatch provided the City of Lawrence with the design and construction support for the new Wakarusa WWTP. The design of the Wakarusa WWTP will rely on the Kansas River WWTP for redundancy, which Black & Veatch also designed and constructed from 2000 to 2004.

The project was modeled and documented using the BIM+ application, Autodesk Revit. Wakarusa was a fast track project of 7 months from beginning to end, requiring unique workflows and practices to be implemented. Throughout the accelerated detail design schedule, BIM+ was utilized heavily to design, communicate, and document this project for our client as well as the multiple subcontractors on the project.

A new submersible pump station was provided within the collection system and will divert base flows up to 2.5 mgd (initially) to the new BNR facility. The PS will be able to divert flow to the Wakarusa facility or the Kansas River as needed. Flows will be received at the new headworks facility consisting of fine screens and grit removal.

Wastewater at the Wakarusa WWTP flows by gravity through the treatment process consisting of a 5-stage BNR basin, final clarifier with pumping station, UV Disinfection and discharge to the Wakarusa River. WAS activated sludge will be thickened with centrifuges and then discharged to the sludge storage basin. The solids are stored for a minimum of 40 to 60 days and then land applied on site. An admin building and chemical feed facility was also provided.

KEY PROCESS COMPONENTS

- ✓ Mechanical Screening
- ✓ Grit & Scum Removal
- ✓ Advanced Wastewater Treatment
- ✓ Biological Phosphorus Removal
- ✓ Aeration
- ✓ Disinfection
- ✓ Anaerobic Digestion of Primary Sludge and WAS
- ✓ Land Application of Solids
- ✓ Regulatory Permitting
- ✓ Trouble Shooting

Date Completed
2018

Project Cost
Construction Cost: $45.2

Client Reference
Dave Wagner, Director of Utilities
1400 East 8th Street | Lawrence, KS 66044
(785) 832-7800

Representative Wastewater Treatment Experience

Plant Name / Location	Size (Mgd)	Study	Pilot Testing	Design	Design/Build	Construction Management	Upgrade / Expansion	Preliminary Treatment	Primary Treatment	Secondary Treatment	Nutrient Removal	Disinfection	Odor Control	Biosolids Improvement	Thickening / Dewatering
Rogers WWTP - Rogers, AR	6 - 14	■		■			■	■			■	■			■
Northwest WRP - Mesa, AZ	18			■		■	■	■	■	■	■	■	■	■	■
Bakersfield WWTP - Bakersfield, CA	25			■	■	■	■	■	■	■				■	
Phosphorous Removal - Frisco, CO	2	■	■	■	■	■	■	■	■	■	■			■	■
Reclaimed Water Supply - Westminster, CO	6	■	■	■			■	■	■		■	■			
JEA Buckman WRF - Jacksonville, FL	54	■		■			■	■			■	■	■	■	■
Southwest WRF - St. Petersburg, FL	20	■					■	■			■	■		■	■
Northwest - Cobb County, GA	12	■	■	■			■	■	■		■	■	■	■	■
Egan - Chicago MWRDGC, IL	30		■	■			■	■						■	■
Rock River - Rockford, IL	40	■		■			■	■	■		■			■	■
WWTP Improvements - Jacksonville, IL	8	■		■			■				■	■		■	■
Blucher Poole - Bloomington, IN	15			■			■	■	■	■		■			
Blue River - Johnson County, KS	10.5	■		■			■	■		■	■	■	■		■
Cedar Creek - Olathe, KS	3			■				■		■		■	■		
Nelson - Johnson County, KS	15		■							■		■			
North - Topeka, KS	12			■				■		■		■			■
WWTP - Lawrence, KS	12.5	■		■			■	■	■	■	■		■	■	■
WWTP - Manhattan, KS	10			■			■	■				■		■	
WWTP - Shreveport, LA	24	■		■			■	■	■	■		■		■	
Coldwater - St. Louis, MO	55	■		■			■	■	■			■		■	■
Southwest - Springfield, MO	50	■		■			■	■	■		■	■			
Sewer System Expansion - Chadbourn, NC	1.5	■		■			■	■			■	■			
Theresa St. WWTP - Lincoln, NE	30	■		■				■	■						■
WWTP - Dayton, OH	72	■		■				■			■	■		■	
WWTP Improvements - Springfield, OH	25			■				■	■		■			■	■
Northside - Tulsa, OK	37			■			■			■			■	■	■
Southside - Tulsa, OK	42	■		■			■	■	■	■	■		■	■	■
WWTP Renovation - Franklin, TN	12	■		■			■	■		■	■	■	■		■
Northwest WWTP Expansion - Collierville, TN	6			■			■	■			■	■			■
Wilson Creek WWTP Expansion - Wylie, TX	48			■					■	■	■	■	■	■	■
WWTP Expansion - Corpus Christi, TX	2	■		■			■	■	■			■	■	■	■
Oak Grove WWTP Improvements - Ennis, TX	4	■		■			■	■	■	■		■			■
Southeast WRF Improvements - Lubbock, TX	32	■		■			■	■	■	■	■	■	■		
Panther Creek Regional - Frisco, TX	20			■				■		■		■		■	■
WWTP Expansion - San Marcos, TX	9	■		■			■	■	■		■	■	■		

ADDITIONAL SERVICES

Our Team has proven local experience in all facets of infrastructure project delivery. Based on what we have learned about your facilities, our team believes the following additional services may benefit the City of Fayetteville:

- USEPA Risk Management Program Rule
- Rate Studies
- Alternative Financing
- Asset Management Services
- Smart Integrated Infrastructure
- Alternative Delivery
- Design Build/Engineering, Procurement, & Construction
- Construction

The following sections offer brief introductions to the Black & Veatch Team's capabilities in these areas. Our team is happy to provide additional information on any of these topics.

USEPA Risk Management Program Rule

The EPA rule codified at 40 CFR Part 68 requires facilities that have any listed chemicals in quantities above specified thresholds to develop a Risk Management Plan (RMP) program. OSHA has a similar rule codified at 29 CFR Part 1910 resulting in a Process Safety Management (PSM) program and is applicable to certain facilities and for states with delegated OSHA programs. These programs must, at a minimum, assess the hazards of an accidental release, minimize the chances of a release through a prevention program, and develop emergency response measures for releases that do occur. Affected facilities must submit a risk management plan (RMP) to the EPA. The plan must summarize the key elements of the facility's program.

Black & Veatch provides a wide variety of services related to compliance with RMP and PSM program requirements. These include:

- Development services for new or existing processes.
- Update and revalidation services.
- Hazard assessments and off-site consequence analyses for all listed chemicals.
- Assistance in developing prevention program elements.
- Facilitation of hazard reviews and process hazards analyses.
- Compliance audits, particularly to comply with the three-year requirement.
- Employee initial and refresher training.
- Assistance with plan and revision submittals.
- Assistance in preparing for public meetings.

Due to the close relationship between EPA's RMP and OSHA's PSM program, Black & Veatch RMP services automatically provide compliance with OSHA's PSM requirements for those clients subject to OSHA standards.

Among the processes addressed in the risk management plans developed by Black & Veatch are selective catalytic reduction (SCR) for air pollution control at power plants, water and wastewater disinfection, chloramination, and refrigeration. The chemicals addressed in these processes include ammonia (anhydrous and aqueous), chlorine, sulfur dioxide, methane, and propane.

RISK MANAGEMENT PLAN/PROCESS SAFETY MANAGEMENT PLAN
Miami-Dade Water and Sewer District | Miami, Florida

Risk Management Plan / Process Safety Management Plan

Black & Veatch supported the Miami-Dade Water and Sewer District (MDWSD) in its five-year update of its applicable plants' risk management plan (RMP) and process safety management (PSM) plans. The Alexander Orr and John E. Preston Water Treatment Plants utilize railcars of chlorine for disinfection while the Central District Wastewater Treatment Plant relies upon one-ton contains of chlorine for disinfection. All three plants have two water treatment processes. Additionally, Central District also creates and stores more than the threshold quantity of methane in the form of digester gas that supplies fuel to on-site cogeneration equipment.

Client Goals / Drivers

These plans are required by the U.S. Environmental Protection Agency (EPA) in accordance with the 40 CFR Part 68 and OSHA in accordance with 29 CFR 1910.119.

Black & Veatch Role on Project

During this project, Black & Veatch performed the following services:

- Reviewed existing RMP / PSM plan documentation.
- Updated and re-validated plant PHAs.
- Updated the elements of each plant's RMP Prevention Program.
- Conducted on-site compliance audits of the process documentation and plant implementation of the RMP / PSM programs.
- Performed updates for each plant's Off-Site Consequence Analysis.
- Reviewed and updated each plant's Emergency Response Plan.
- Coordinated the re-certification documentation to EPA.
- Provided updated RMP / PSM documentation.

Additionally, Black & Veatch supported the de-registration of the South and North District Wastewater Plants as they modified their processes to no longer rely upon the regulated chemical chlorine for disinfection.

Key Components

✓ USEPA Risk Management Program Rule

Date Completed
2014-2015

Project Cost
Cost: $180,000

Client Reference
Donna Fries, Safety Supervisor
3071 SW 38th Avenue
Miami, FL 33146
(786) 268-5620

Rate Studies

As program costs associated with improving water quality increase, and the cost of other related programs have been implemented, affordability is a huge concern for utilities. It is critical that a utility develop a long-term financial model that will allow it to evaluate the impact of the program on an annual basis, including what increases in rates will be necessary to fund the program, and what the impact will be on the utility's financial condition.

It is critical that the utility have in place strong financial policies, and to adhere to those policies in order to maintain a strong financial condition, which will allow the utility to debt finance necessary improvements at the lowest possible rate. It is also important for the utility to plan for continued reinvestment in the system, renewing and replacing existing assets at an appropriate rate, in order to avoid future problems due to neglected infrastructure. Development of defensible cost allocation and rate design that supports equitable cost recovery minimizes any subsidization of costs among customer classes and reflects potential changes to rate structure and discount policies to mitigate adverse customer bill impact. Our team typically utilizes a four-step process for developing the financial plan, cost of service, cost allocation and user fee methodology and in designing rates and charges.

WATER, WASTEWATER AND STORMWATER RATE STUDY
Broken Arrow Municipal Authority (BAMA) | Broken Arrow, Oklahoma

In 2013, Black & Veatch was selected to conduct a comprehensive water, wastewater and stormwater rate study for BAMA. Key study elements included the development of financial plans for a five-year period; analysis of the cost of providing water, wastewater and stormwater service to retail and wholesale customers; and the design of cost based rates. Also included in the study was the development of a user-friendly rate model and one day of training for City/BAMA representatives.

This was the first rate study conducted by an outside firm for the City of Broken Arrow (population 98,500); therefore, Black & Veatch proposed a total of six workshops to be held with the City and BAMA representatives as well as the City Council. These workshops were held at key points in the study and were important for providing appropriate consultant/client interaction, exchanging ideas and developing recommendations tailored to meet the utilities' needs. This process also allowed the team to educate the City Council on the process and study results prior to their formal meeting. The proposed rate schedule, which included water and wastewater system development fees, was unanimously approved by BAMA.

Black & Veatch has recently updated the study for the 2017 – 2021 study period.

Date Completed
2017

Project Cost
Cost: $59,710

KEY COMPONENTS
- Rate Study
- Comprehensive water, wastewater and stormwater rate study
- User friendly rate model
- Series of workshops with City/BAMA staff and City Council

Client Reference
Anthony Daniel, Utility Director
485 North Poplar Avenue
Broken Arrow, OK 74013
918-259-7000

Alternative Financing

Today with the need to fund increasing regulatory, operational, and infrastructure maintenance drivers, broad funding strategies are useful tools to allow proactive system and infrastructure management We understand the drivers that state and federal agencies consider favorably to determine which projects get funded. Our team has the ability and experience to design creative funding approaches using multiple federal, state, and private sources to accomplish objectives. We are able to provide alternative finance planning, applications, strategic planning, and administration to deliver a "concept-to-completion" process, reviewing over 122 programs as sources of financial assistance. The end result of our efforts may include options for alternative funding through low-interest loans, grants, and principle forgiveness combined with traditional methods.

FINANCIAL PLANNING AND WASTEWATER RATE ASSISTANCE
Metropolitan Sewer District of Greater Cincinnati | Cincinnati, Ohio

Financial Planning and Wastewater Rate Assistance

Black & Veatch has provided financial planning and wastewater rate assistance to the Metropolitan Sewer District of Greater Cincinnati since the 1960s. During this time, Black & Veatch has evaluated and modeled several issues facing the utility including a reduction in staff, increased cost of benefits, and capital program development. Black & Veatch recently completed a comprehensive financial planning, cost of service and rate design analysis for the 2017-2021 study period. This analysis included the evaluation of the impact of changes to the capital improvement program, and potential rate structure changes to improve revenue stability, affordability and equity.

Consent Decree and Affordability Analysis Support

The Black & Veatch team assisted the District in developing an affordability plan for the implementation of its multi-billion dollar Combined Sewer Overflow and Separated Sewer Overflow Consent Decree plan.

Black & Veatch developed multiple financing plans during planning and negotiations, illustrating the level of capital improvement funding possible under various economic situations, and given different limitations on annual revenue increases and overall total level of residential user charges. The Black & Veatch team also supported the District in determining the financial affordability and communicating the financial affordability constraints of customers served. We participated in discussions with regulators and the Sierra Club, and worked directly with USEPA's consultant to develop mutually agreeable data sources and calculations for several elements of the Financial Capability Analysis.

Black & Veatch was the lead consultant for the District's Phase 2 Consent Decree Affordability Analysis, in support of a June 2017 submittal to regulators. This work included evaluation of alternative capital programs and participation on the District team in development of a recommended program.

Date Completed
2005-Ongoing

Project Cost
Cost: $366,803

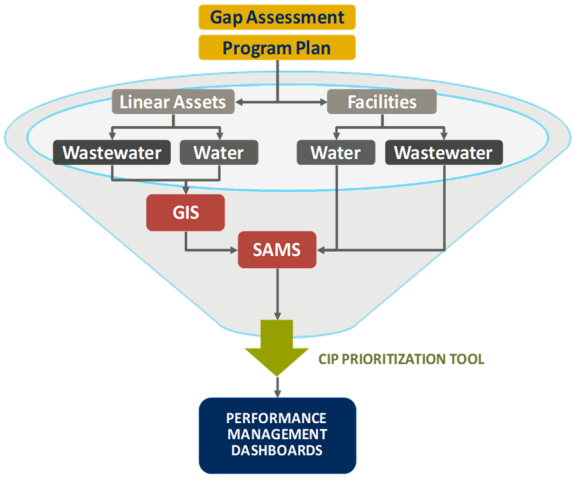
Key Components

- Comprehensive wastewater cost of service and rate design study
- Long-term financial planning
- Consent decree planning/negotiation support services
- Affordability analysis
- Alternative rate design
- Surcharge and Hauler rate design

Client Reference
Ihab Tadros, Deputy Director/CFO
1600 Gest Street
Cincinnati, OH 45204
513-244-1305

Asset Management Services

Asset management provides a framework to balance financial, environmental, public perception, and operational aspects of operating an infrastructure system in a structured, risk-based framework. As you continue to upgrade your system, consideration should be given to future optimization and tracking of the operational and maintenance data associated with newly acquired and existing assets. Analysis of system data will provide additional tools for capital prioritization to guide future investment.



Comprehensive Assessments and an asset management framework provide a more focused approach for the operation and maintenance of assets.

TMUA provides water and sewerage services to more than 500,000 people in and around Tulsa, Oklahoma. TMUA initiated a Utility Enterprise Initiative that incorporates governance and contractual improvements, strategic management improvements, performance management, operations and CIP optimization, and asset management system improvements. The completed first phase assessment identified asset management as a key element to drive better O&M optimization and prioritization of the capital improvements program. As part of the second phase, Utility Enterprise Initiative, Black & Veatch has commenced the initial phase of asset management implementation utilizing the international PAS 55 framework assessment.

Black & Veatch's services have included:

- PAS 55 gap analysis – An assessment of TMUA's current asset management approach using document review and structured interviews with more than 20 staff. Workshops were held to validate findings.
- ISO 55001 gap analysis – Recently, Black & Veatch has undertaken an ISO 55001 assessment to update the original PAS 55 assessment.
- Development of improvement roadmap – Development of an action plan to close the gaps identified in the gap analysis. This presents an 18 month to two- year program. The roadmap was developed with TMUA staff and includes a road mapping workshop.
- Asset management framework policy and strategy development – Assistance provided in the form of templates, advice, examples and facilitated workshops.
- Asset management information systems assessment – Review of current systems and needs, including workshops with TMUA staff. Assisting with the procurement of new CMMS and GIS systems.
- Implementation of the improvement roadmap – services include assisting with updating and developing new processes and procedures, implementing an enterprise-wide risk management framework, training and change management.
- Annual assessments – Independent review on progress towards ISO 55001 compliance

TULSA UTILITY ENTERPRISE INITIATIVE/PHASE 2 ASSET MANAGEMENT PROGRAM
Tulsa Metropolitan Utility Authority | Tulsa, Oklahoma

After a successful Phase 1 pilot program that tied wastewater plant CMMS and condition assessments to SAMS business risk assessment, Phase 2 is building Tulsa's asset management capabilities according to ISO 55001 standards. Black & Veatch is leading the asset management efforts. Program implementation tasks include developing asset management policies, strategies, objectives, and plans, as well as other integrated processes and systems to support overall implementation of asset management. A sophisticated capital prioritization and optimization system is being implemented, which includes life cycle cost and business case analysis protocols. Information systems are being consolidated to provide a cohesive AM system aligned with the City's Performance Management Systems.

Relevant Aspects

- ISO 55001 framework planning, organizational strategy, policies and procedures for asset management
- Consolidation of seven CMMS programs into Lucity integrated with GIS
- Risk assessment protocols and system, with direct ties to CMMS
- Reliability-centered maintenance planning
- Pilot capital prioritization and optimization program identified $11M savings with minimal increase in risk. The two subsequent annual cycles yielded over $100M in savings from the 5 year CIP with no appreciable increase in risk.

Date Completed
2011-Ongoing

Project Cost
Engineering Fee: $6.68M

"The Black & Veatch team brought substantial experience and a deep understanding of this approach and we have begun implementing the resulting recommendations with Black & Veatch's support."
-Clayton Edwards, P.E., Director TMUA

Key Components
✓ Asset Management

Client Reference
Clayton Edwards
Director Water and Sewer
175 East 2nd Street, 8th Floor
Tulsa, OK 74103
918-596-7810

Smart Integrated Infrastructure

Smart Integrated Infrastructure helps provide the data tied to asset management and capital and maintenance prioritization. Our team is experienced in incorporating a data analytics system for the purposes of giving visibility to plant systems remotely, providing access to plant data to operational staff, and providing key performance indicators to the design team and water utility management.

Our team's Smart Analytics can take real-time and other business system data, perform advanced calculations and analytics and provide data visualization and dashboard screens in a web-based interface to help optimize operations. Smart Analytics enable the diagnosis and resolution of current issues as well as the evaluation of long-term optimization and performance. The "Scorecard" application leverages the capabilities embedded within our ASSET360™ analytics platform – such as data management tools, calculation engines, user interfaces, and a web-based portal – to produce a user-friendly "dashboard" that will give operations and maintenance staff key information very quickly in a familiar format.

In addition, our team can define and configure a performance analyst visualization suite that focuses on system-wide chemical and energy use measured against flow. This suite will provide information that can be applied to the goal of optimizing energy use and reducing the cost of water production focusing on individual assets rolled up to major systems.

AUTOMATION MASTER PLAN 2015
Santa Clara Regional Wastewater Facility | San Jose, California

The project included a comprehensive evaluation of the Distributed Control System (DCS) for a 167 mgd Regional Wastewater Facility. Project elements included developing system requirements, condition assessment of hardware and software, adequacy of system to meet current and future needs, completeness and accuracy of system documentation, development of Knowledge Management System, adequacy of staff training and integration of automation improvements with the Capital Improvement Program. In addition to the evaluation, the AMP also included a comprehensive set of Automation Standards to guide and govern all future CIP projects.

Key Components
✓ Automation Master Planning

Client Reference
Lily Zhu, PE
700 Los Esteros Road | San Jose, CA 95134
408-945-5177

Date Completed
2015

Project Cost
Fee: $697,000

Alternative Delivery

Alternative delivery describes methods that are considered to be alternatives to the traditional Design-Bid-Build method of delivery. Black & Veatch has experience providing Alternative Delivery solutions using many different options, including Design-Build, Construction Management at Risk (CMAR), Alliance/Framework agreements, and Public-Private Partnership (P3). Owners typically consider Alternative Delivery because it offers higher quality work, a single point of responsibility, assignment of risk, fast-track completion, lower project cost and more overall control.

Black & Veatch can help an Owner navigate the wealth of delivery choices, selecting the method that is the most appropriate and effective system for its particular project. This pre-selection consultation generally includes evaluation of whether the Owner's budget and schedule are realistic, whether the Owner can clearly communicate the project/ program's intended results to the design team, whether the Owner understands and can convey the risk allocation among project participants, and lastly, the Owner's familiarity with the building process and level of in-house management capability or how much may guide the Owner in determining the appropriate project delivery system.

The following is a brief review of project delivery systems that Black & Veatch provides:

- Design-Bid-Build (Traditional) - The Owner would procure Black & Veatch as the designer to plan, design, and provide construction phase engineering. The Owner would separately procure a contractor to perform the construction.
- Construction Manager (CM) at Risk (Alternative) – The Owner procures a designer and a CM separately. As the CM, Black & Veatch would then act as a General Contractor during construction either by working directly with subcontractors or by advertising, soliciting, and awarding bids. The CM also coordinates with the designer. The CM and the Owner typically negotiate a Guaranteed Maximum Price (GMP) for the project, which transfers the risk to the CM. The Owner manages the project, relying on the CMAR to coordinate the design and the construction elements of a project. Because of our engineering background, Black & Veatch is comfortable when the GMP is based only on a partially-completed design and can help arrange early agreement on preferred materials, equipment types and other project features.

- **Design-Build (Alternative)** – The Owner procures a single entity (which may be a joint venture) to be responsible for design and construction. This single entity is responsible for design, construction, and project management. When Black & Veatch leads the DB team, it is considered to be design-led; otherwise it is contractor-led. Bids are typically not taken for construction. The Owner typically allows the single entity to manage the project and coordinate the design and construction to achieve contract stipulated terms related to technical issues, schedule, and budget. For an Owner, the primary benefit is the simplicity of having one party responsible for the development of the project. Since the construction team is working together from the outset, DB offers the opportunity to save time and money.
- **Alliance/Framework Approach (Alternative)** – The Owner procures alliance partners who are obligated to work collectively for the benefit of the project. Every decision of the alliance leadership team is unanimous. If one of the alliance partners cannot support a decision or solution another solution must be found. Furthermore, an alliance agreement does not provide for any dispute resolution mechanism, since all disputes or differences of opinion must be resolved internally. The commercial framework of direct costs, corporate overhead, normal profit and gain share creates strong incentive for the alliance partners to pursue and achieve outstanding results and prevent any possibility of a win/lose result.
- **Public-Private-Partnership** - The contract is between a public sector authority and a private party, in which the private party provides a public service or project and assumes substantial financial, technical and operational risk in the project. In some cases, Black & Veatch and team partners will form a special company ("special purpose vehicle" or SPV) to design, build, maintain and operate the asset for a contracted period. The SPV signs the contract with the Owner and with subcontractors to build the facility and then maintain it, which facilitates funding.

Black & Veatch has been executing complex water and wastewater projects using Alterative Delivery Methods design-build for over 20 years. Through the end of last year, Black & Veatch has completed design/build water and wastewater projects totaling nearly $1 billion in revenue, and executes projects ranging in size from $4 million to more than $200 million. *The company has a bonding capacity of $1 billion dollars.*

Design-Build/Engineering, Procurement & Construction

Offering a full spectrum of Design-Build/Engineering, Procurement & Construction (EPC) services, Black & Veatch is one of the most diversified contractors in the industry. Our seasoned professionals have extensive experience on projects of complex size and scope throughout the world. We provide state-of-the-art technologies and world-class project management skills, combined with Black & Veatch's proven business consulting and industry-leading safety programs, to ensure a competitive price, schedule certainty and long-term value on our clients' most challenging projects.

Construction

Black & Veatch is a leader in both the U.S. and world markets in providing construction services for the energy, water and telecommunications industries. No one else offers such a comprehensive range of services. We have both the flexibility and experience to offer innovative solutions in almost any situation or geographical location.

Through one of our wholly-owned subsidiary construction companies, Black & Veatch Construction, Inc (BVCI), representing the union construction area and Overland Contracting Inc. (OCI) representing the open shop area of Black & Veatch construction, Black & Veatch offers a single source responsibility, innovative solutions, a "begin with the end in mind" construction-driven approach to project execution, a startup driven construction planning mindset and a strong emphasis on safety throughout all aspects of our projects. Both BVCI and OCI

were created in response to industry needs for an integrated project provider and continue to grow Black & Veatch's construction operations as they amass an impressive experience record.

By combining the reliability and commitment of dedicated project teams with cost-effective specialized support services to meet the unique needs of each project, Black & Veatch consistently exceeds our client's expectations. Our clients can expect a high quality, cost effective, safe project, delivered on time and within budget.

With construction having ties to the engineering groups, Black & Veatch is uniquely positioned to offer customers complete projects with more control, fewer subcontracts, lower cost and greater schedule assurance than ever before. Black & Veatch has considerable construction experience, skills, resources, and equipment to perform work both in the U.S. and in international markets.

TOMAHAWK WWTP IMPROVEMENTS CONCEPTUAL DESIGN
JOHNSON COUNTY WASTEWATER| LEAWOOD, KANSAS

The Project Definition Phase confirmed the flows and loads to the Tomahawk WWTP and the evaluation of necessary treatment processes to meet current and future NPDES permit limits. The existing Tomahawk plant is permitted for 10 mgd, although the full watershed flow is 19 mgd. It is currently a trickling filter plant that can only meet its ammonia and CBOD limits at 7 mgd, so the remainder of the flow is sent to Kansas City, Missouri through a linking interceptor.

Through alternative development and evaluations, the Project Definition Phase determined the optimal liquid treatment technologies for nutrient removal to meet current and anticipated future NPDES limits and to treat all flows at the Tomahawk plant. Evaluations of alternatives for all phases of the project were performed for influent pumping, primary clarification, secondary treatment with biological nutrient reduction, final clarification, tertiary filtration, disinfection, solids thickening, digestion, dewatering, sidestream treatment, and auxiliary wet weather treatment.

Assistance to JCW was provided to help negotiate the new NPDES permit with KDHE and USEPA. Site permitting with USACE and FEMA is also being completed as a result of the new site layout.

Following completion of the Project Definition Phase, B&V completed preliminary and detailed design services.

KEY PROCESS COMPONENTS

- ✓ Mechanical Screening
- ✓ Grit & Scum Removal
- ✓ Advanced Wastewater Treatment
- ✓ Biological Phosphorus Removal
- ✓ Aeration
- ✓ Disinfection
- ✓ Anaerobic Digestion of Primary Sludge and WAS
- ✓ Land Application of Solids
- ✓ Regulatory Permitting
- ✓ Trouble Shooting

Date Completed
2016

Project Cost
B&V Fee $1.9M
Construction Cost (Est): $240M

Client Reference
Tami Lorenzen, Managing Engineer – Treatment
4800 Nall Ave | Mission, KS 66202
913 715 8777

Appendix: Resumes

Jeff Henson, P.E.

Mr. Henson is a Client Director and Associate Vice President for Black & Veatch. He specializes in wet weather program management, water supply, and groundwater management.

Client Director

Expertise:
Wet Weather Program Management, Water Supply, Groundwater Management

Education
- MS, Water Resources Engineering, University of Kansas, 1993
- BS, Civil Engineering, Kansas St Univ Manhattan, 1985

Professional Registration
PE - 11831, Kansas, 1990

Total Years of Experience
32

Years of Experience with B&V
32

Professional Associations
- Water Environmental Federation
- American Water Works Association

Office Location
Kansas City, Missouri

PROJECT EXPERIENCE

Louisville Water Company; Riverbank Filtration Study and Preliminary Design; Louisville, Kentucky

Technical Lead. Evaluated aquifer yield and horizontal collector well capacity for riverbank filtration wellfield capacity up to 180 mgd. Proposed wellfield will include up to 12 collector wells connected to a deep tunnel.

City of Kansas City; Westport Area Integrated Wet Weather Plan; Kansas City, Missouri

Project Director. Led a multi-discipline team in the development of an Integrated Wet Weather Plan for the Westport area, which is a popular entertainment district. The plan included identifying the most beneficial combination of green and grey improvements that is supported by merchants in the area. The plan also included working with the merchants to identify their willingness to fund project improvements using a public/private partnership approach.

City of Springfield; Consent Decree Sanitary Sewer Overflow (SSO) Program; Springfield, Missouri

Program Manager. Assisting the City with the first phase of their Consent Decree program which is referred to as their 7-year Early Action Program (EAP). Included is development of the actual 7-year EAP, and design and implementation of the projects in the program. Included are pilot private I/I source identification and removals as well as public sewer rehabilitation. Also included is rainfall and flow monitoring, detailed modeling of the system, wastewater treatment plant stress testing, and development of an Integrated Long-term Control Plan.

City of Kansas City; Town Fork Creek Integrated Wet Weather Plan; Kansas City, Missouri

Technical Lead. Leading the technical aspects of a plan to integrate stormwater management and combined sewer overflow plans to identify solutions that maximize reduction in storm damage while reducing combined sewer overflows. This involves a comprehensive evaluation of this five square mile watershed identifying BMP locations for lot, neighborhood, and regional applications to capture runoff before entering the system. The plan also will consider new policies and approaches to manage runoff not currently allowed.

Suzie G. Carpenter, P.E.

Ms. Carpenter has extensive experience in water and wastewater treatment plant and pumping station facilities design, in addition to collection and transmission system design. Her leadership experience includes planning, conceptual design, detailed design, bid document preparation, construction submittal review, and construction cost evaluation utilizing both Progressive Design Build and Traditional Design Bid Build project delivery methods. Ms. Carpenter has designed new facilities and led the design of retrofitted equipment into existing facilities.

PROJECT MANAGER

Expertise:
Wastewater Pumping; Wastewater Residuals; Wastewater Treatment; Water Distribution; Water Residuals; Water Treatment

Office Location
Kansas City, MO

Education
- MS, Civil Engineering, Environmental, University of Kansas, 2006
- BS, Civil Engineering, Environmental, University of Missouri, 1999

Professional Registration
- PE - 2004017139, Missouri
- PE - Kansas
- PE - Nebraska
- PE - Iowa

Total Years of Experience
19

Black & Veatch Years of Experience
13.4

PROJECT EXPERIENCE

Johnson County Wastewater; Nelson Wastewater Treatment Plant Solids Handling Improvements; Johnson County, KS

Project Manager - Ms. Carpenter managed the design and construction phase services for improvements to the solids processing facilities at the Nelson WWTP including the gravity thickening, dewatering, storage, new mixing system, and truck loading facilities.

City of Omaha; Burt Izard Lift Station Improvements Project; Omaha, NE

Project Manager - As part of the City's effort to combat the aging infrastructure of their primary wastewater lift stations, Ms. Carpenter is currently managing the design of comprehensive updates to this 50 mgd CSO lift station. Updates to the facility include new bar screens and screening conveyance, grit basin modification and upgrades to electrical equipment in the grit room for code compliance, new pumps, piping, and valves in the Lift Station, a new MCC, power panel, VFD's, utility power, and lighting protection, a new electrical room, instrumentation and controls upgrades, HVAC upgrades, structural modifications for construction of the electrical room, and new maintenance cranes for removal of the large pumps and motors. Ms. Carpenter's responsibilities include managing overall project coordination and bidding services for the recommended upgrades, evaluation of construction constraints and sequencing, and construction cost estimating.

City of Olathe; Harold Street Wastewater Treatment Plant Improvements Project; Olathe, KS

Project Manager - Project includes upgrades of the digester complex, rehabilitation of the existing dewatering system with a new centrifuge, high rate trickling filter media replacement, evaluation of code compliance in multiple buildings, and other miscellaneous plant improvements. Ms. Carpenter's responsibilities included managing overall project coordination and design oversight for the multi-discipline team.

John Keller, P.E.

John. Keller has considerable experience as a project manager for the Kansas City Regional Office working primarily on Wastewater Treatment Plants and Pumping Stations. His wastewater experience includes multiple treatment plant evaluations and improvements. In addition, he has also worked on several collection systems pumping stations expansions and upgrades. His work experience ranges from the preparation of conceptual design reports and studies, master plan updates, detailed design, construction administration, resident services, and start-up.

Project Manager

Specialization:
Wastewater Design and Rehabilitation

Office Location
Kansas City, Missouri

Education
- MCE, Civil Engineering, University of Kansas, 1999
- B.S., Civil Engineering, University of Kansas, 1990

Professional Registration
- PE – KS,1994, 13318
- PE – AR, 2006, 12623
- PE – NV, 2009 19858
- PE – MO, 2010, 2010038805

Professional Associations
Water Environmental Federation

Total Years of Experience
29

Years of Experience with B&V
29

PROJECT EXPERIENCE

Johnson County Wastewater; Tomahawk Creek WWTF Expansion; Johnson County, KS

Project Manager. Responsible for planning and design of the expansion of existing Wastewater Treatment Facility. Plant overall improvements will consist of new influent pumping and grit removal, fine screening, primary clarifiers, 5-stage BNR treatment, secondary clarifiers, intermediate pumping, disinfection, solids processing, and sit permitting. A new discharge permit was negotiated with KDHE/EPA. Anticipated treatment limits are TN=5.0 mg/L and TP=1.0 mg/L.

City of Lawrence; Wakarusa WWTP and Conveyance Corridor; Lawrence, KS

Project Manager. Responsible for planning, design and construction of the new Wakarusa Wastewater Treatment Plant at a green field site. The new plant will consist of a 2.5 mgd treatment train which is capable of phase expansion to 5.0 mgd. The project includes offsite submersible pumping station, force main conveyance, headworks with grit removal, 5-stage BNR basins with mechanical aeration, clarification, UV disinfection, aerated sludge storage, sludge thickening, and peak flow storage. When completed, the plant will take flow from the City's Kansas River WWTP and allow expansion on the growing southern side of the City. The plant is designed to meet a TN=8 mg/L and a TP=1 mg/L.

Unified Government Wyandotte County/Kansas City, KS; Kaw Point WWTP Dewatering Facilities; Kansas City, KS

Project Manager. Responsible for design and construction of a new dewatering biosolids facility at the Kaw Point WWTP. The new facility, which replace the existing belt filter press and incineration facilities, provided 4 new dewatering centrifuges capable of dewatering combined 28 dry tons per day of combined primary and waste sludge to greater than 30% total solids concentration. In addition, the facility provides dual truck bays and a liquid bulk polymer system. Responsibilities included leading the detailed design of the new facility and providing construction administration support.

Johnson County Wastewater; New Century Air Center WWTP Expansion (Phase 1 & 2); Johnson County, KS

Project Manager. Responsible for design and construction of a wastewater treatment plant expansion. Improvements included a new 0.48 MG CMAS aeration basin, new Final Flow Splitter Box, new 45-feet diameter final clarifier, new RAS/WAS pumping station, four new high speed gearless turbo aeration blowers, chemical feed improvements and a new SCADA system. The improvements increased the plant capacity to 1.65 mgd while allowing the facility to closely monitor effluent nitrogen and phosphorus discharges to meet permit requirements.

Greg Nelson, P.E.

Mr. Nelson has extensive experience in the design of water transmission pipelines and distribution mains; ground and elevated storage tanks; pumping stations; and wastewater collection system facilities, including gravity sewers, force mains, and lift stations. He also has extensive experience in water system master planning, water distribution system hydraulic analyses and computer modeling, economic analysis of alternative plans, and report preparation. He has conducted over 50 water supply and/or distribution system studies for clients throughout the country.

Expertise:
Computer Modeling; Distribution Mains; Pump Stations; Storage Facilities; Wastewater Collection Facilities; Water Distribution Master Plans; Water Transmission Pipelines

Education
- Bachelors, Civil Engineering, Iowa State University, 1976

Professional Registration
PE - 60859, 2009

Total Years of Experience
41

Years of Experience with B&V
41

Professional Associations
- American Water Works Association

Office Location
Dallas, Texas

PROJECT EXPERIENCE

Tarrant Regional Water District; State Highway 360 Pipeline Replacements; Mansfield; Mansfield, Texas

Engineering Manager. Responsible for design, preparation of plans and specifications, and construction contract administration for replacement of 72-inch and 90-inch pipelines (2,000 feet total length) associated with new State Highway 360 construction. Fast-track design was performed, including coordination with TXDOT engineers, to meet schedule and requirements for State Highway 360 construction.

City of Dallas; Water and Wastewater Main Designs; Dallas, Texas

Engineering Manager. Responsible for management and preparation of plans and specifications for over 50,000 feet of water mains and gravity wastewater mains at 9 locations throughout City of Dallas. Water mains ranged in size from 8-inches to 72-inches. Wastewater mains ranged in size from 8-inches to 42-inches. Work also included management/coordination of topographic surveys, easement preparation, and subsurface utility surveys.

Tarrant Regional Water District and Dallas Water Utilities; 108″ Integrated Pipeline; Ellis County, Texas

Engineering Manager. Responsible for design and preparation of plans and specifications for Sections 13 and 14 of 108-inch Integrated Pipeline project (total length of 26 miles). Also involved with preparation of preliminary design report and coordination of design activities with Program Manager.

City of Dallas; Water and Wastewater Main Designs; Dallas, Texas

Engineering Manager. Managed the preliminary design reports; detailed design; and preparation of plans and specifications for over 80,000 feet of water mains and gravity wastewater mains at 18 locations throughout the City of Dallas. Water mains ranged in size from 8-inches to 36-inches. Wastewater mains ranged in size from 8-inches to 30-inches. Work included topographic surveys, easement preparation, and subsurface utility engineering (SUE) surveys.

Mark Bushouse, P.E.

Mr. Bushouse has a wide range of experience in the water and wastewater fields. This experience includes master planning, design, construction administration and inspection.

Senior Engineering Manager

Expertise:
Pipelines; Project Management and Construction Inspection; Wastewater Collection; Wastewater Pumping; Wastewater Residuals; Wastewater Solids Processing, Thickening, Dewatering, Storage, Incineration; Wastewater Treatment; Water and Wastewater Treatment and Conveyance Design; Water Horizontal Collector Wells; Water Residuals; Water Residuals Thickening, Dewatering, Storage; Water Storage; Water Supply; Water Transmission; Water Treatment

Education
- MSs, Civil Engineering, University of Kansas, 2002, United States
- BS, Civil Engineering, University of Kansas, 1990, United States

Professional Registration
PE - Civil, 2011024013, Missouri, 2011
PE - Civil, 104479, Texas, 2009
PE - Civil, 18106, Iowa, 2006
PE - Civil, 13509, Kansas, 1995

Total Years of Experience
27

Years of Experience with B&V
27

Office Location
Kansas City, Missouri

PROJECT EXPERIENCE

Little Blue Valley Sewer District; Phase 2 Atherton Wastewater Treatment Plant Improvements; Independence, Missouri

Senior Engineering Manager. Supervised the preparation of drawings and specifications for a new 60 dry ton per day incineration facility to replace the existing incinerator system. The facilities include new dewatered cake pumps and storage silo, incinerator, primary and secondary heat exchangers, wet scrubber and ash slurry system, fluidizing air blower and induced draft fan, with provisions for future advanced emissions treatment systems.

Johnson County Wastewater; Blue River MSD No. 1, Wastewater Treatment Plant Expansion; Overland Park, Kansas

Resident Project Representative/Project Engineer. Performed inspection and construction phase services administration for the construction of a 2 MGD expansion to the Johnson County Wastewater Blue River Wastewater Treatment Plant. The project includes construction of an influent pump station, two aeration basins, two final clarifiers, a dissolved air flotation thickener, ultraviolet disinfection facilities, and an extraneous flow holding lagoon.

City of Lawrence; Lawrence Kansas Wastewater Treatment Plant Biosolids Processing Facilities; Lawrence, Kansas

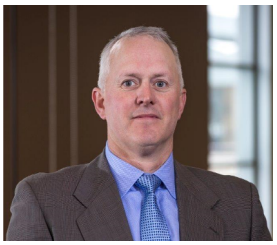
Lead Design Engineer. Prepared drawings and specifications for a single story biosolids dewatering building, dewatered biosolids storage basin, dissolved air floatation thickener, sludge pumping facilities, new non-potable water system, and biofilter odor control system. The dewatering facility includes two 2 meter belt filter presses, polymer feed systems, belt conveyors, and odor control equipment. Sludge pumping improvements include the installation of 6 progressing cavity pumps to transfer sludge in various forms of stabilization. The new non-potable water system expands the existing system from 500 gpm to 2,100 gpm.

City of Lawrence; Clinton Reservoir Raw Water Pumping Station, Cathodic Protection System Evaluation; Lawrence, Kansas

Project Engineer. Coordinated the inspection and evaluation of an existing raw water pipeline cathodic protection system and its ability to provide sufficient corrosion protection in accordance with current NACE corrosion protection criteria.

Andrew Hansen, P.E.

Mr. Hansen has served as project manager, project engineer, or design engineer for the study and design of water and wastewater projects. His responsibilities include contract preparation, project planning and development, preparation of construction documents, project schedule and budgets, quality assurance, and construction administrations.



Project Manager

Expertise:
Water Distribution; Water Supply; Water Transmission; Water Treatment

Education
- Masters, Civil Engineering, Engineering Management & Water Resources, University of Kansas, 1995
- Bachelors, Civil Engineering, Water and Wastewater Systems, University of Nebraska, 1991

Professional Registration
PE - E-12726, 2008
PE - 13933, 1996

Total Years of Experience
26

Years of Experience with B&V
26

Professional Associations
- Nebraska AWWA
- Kansas AWWA

Office Location
Kansas City, Missouri

PROJECT EXPERIENCE

City of Lincoln, Nebraska; Northeast Pumping Station Improvements; Lincoln, Nebraska; In-Progress-In-Progress

Project Manager. Responsible for coordination of a team to upgrade the largest pumping station in the City of Lincoln. Improvements included addition of a 20 mgd high service pump, replacement of an existing transfer pump with an AFD driven 45 mgd pump, and replacement of the existing MCC and 5 kV switchgear. Other elements of the project included lead paint abatement, valve replacements, pavement replacement, and exterior building maintenance.

Lincoln Water System; 60-inch Water Transmission Main; Lincoln, Nebraska

Project Manager. Responsible for the design of 52,500 feet of 60-inch transmission main which will increase the City's total supply capacity to 210 mgd. Project involved alignment study, surveying, geotechnical investigations, easement acquisition, pipe design for steel, PCCP, and ductile iron pipe, bidding assistance, construction phase services, and resident project representation. One of the more critical features of the design was a inclusion of a 48-inch sleeve valve to control the hydraulic grade line of the transmission main. This project also included extensive stakeholder coordination including Nebraska Department of Roads, Lincoln Public Works, Nebraska Department of Environmental Quality, Aquila Gas, and numerous other utilities impacted by the project.

Beaver Water System; Chlorine Dioxide Improvements; Lowell, Arkansas

Project Manager. Currently designing new disinfection facilities for the generation and feed of chlorine dioxide with the capacity to disinfect 150 mgd. The chlorine dioxide will be generated with a two chemical system that uses gaseous chlorine and sodium chlorite. The facility will also be designed to feed chlorine in the event that the chlorine dioxide generation system is out of service.

Ferrous sulfate storage and feed systems will be installed at each of the three treatment plants downstream of the disinfection facilities and will feed ferrous sulfate at the flash mix of each plant. Ammonia feed facilities including bulk storage and feed systems have been designed so they are ready for implementation if additional DBP reduction is required.

James Maher, P.E.

Planning Engineer, Infrastructure Planning

Expertise:
Master Planning; Water Demand Forecasting; Water Distribution System Hydraulic Modeling; Water Loss Evaluation; Water Quality Modeling

Education
- MS, Civil Engineering, Water, Univ Missouri Kansas City, 2009
- BS, Civil Engineering, Univ Missouri Kansas City, 2006

Professional Registration
PE - 2011000917, Missouri, 2011

Total Years of Experience
18

Years of Experience with B&V
12

Professional Associations
- American Water Works Association - Member

Office Location
Overland Park, Kansas

Mr. Maher specializes in hydraulic evaluation and water quality evaluation of water distribution systems and wastewater collection systems. He has experience with developing, calibrating, and updating computer models of these systems and using them as a tool in master planning efforts and system analysis. Mr. Maher has experience with the integration of GIS (Geographical Information Systems) technologies in computer-aided modeling efforts and is proficient with ArcGIS software. He is proficient in several water system modeling software packages including H2OMAP Water, WaterGEMS, InfoWater, InfoWorks, H2ONET, and H2OMAP Sewer.

PROJECT EXPERIENCE

St. Louis Water Division; Water Distribution System Model Construction and Calibration; St. Louis Water, Missouri

Engineering Manager. A distribution system computer model of all-pipes was developed from the City's 1,400 AutoCAD drawing files. Extensive field testing was performed to gather a significant amount of data for use in the calibration of the water model. Calibration of the model to a high degree of accuracy and model software training in workshops for City staff are part of this project in order to transfer knowledge and aid the City in use of their new system evaluation tool.

The City of Kansas City, Missouri, Water Services Department; Water System Master Plan Update; Kansas City, Missouri

Engineering Manager. The City's GIS database was used to develop and construct an all-pipes distribution system model. As-built drawings for the entire system were reviewed to attribute installation years to the distribution pipes as these had not been maintained in the GIS. The materials and diameters of pipelines were validated during the system as-built review process. Metered sales data was allocated to the model from AMR information for a peak 3-day period and the model was calibrated using a 72-hour extended period simulation. Areas of low correlation were identified and field testing was performed to assess C-factors, to locate unknown closed or partially closed distribution system valves, and to identify the occurrence of mistakenly open valves at pressure zone boundaries. Water demand projections through 2035 were developed which included retail projections and detailed wholesale demand projections based on surveys of 39 existing and potential wholesale customers. The City's Water Loss Management Plan was updated and included summary of the ongoing leak detection and water loss reduction program. Water age evaluations, fire flow evaluations, and extended period hydraulic capacity evaluations were performed and a phased capital improvement program was developed based on recommendations from quality, fire flow needs, and hydraulic needs to include a holistic and balanced improvement program.

Karen Burgi, P.E.

Ms. Burgi is a Regional Planning Leader with Black & Veatch's Infrastructure Planning Department. She has extensive experience master planning of both water and wastewater facilities including: population projections, regulatory compliance, hydraulic modeling, vulnerability analysis, and developing improvement alternatives. Ms. Burgi also serves as the liaison between the Denver office and company-wide resources in hydraulic modeling and master planning.

Regional Planning Leader

Expertise:
Population and Flow Projections; Sustainable Solutions; Wastewater Collection System Modeling; Water and Wastewater; Water Distribution System Modeling

Education
- Masters, Civil Engineering, Environmental Engineering, Colorado State University, 1993
- Bachelors, Civil Engineering, Colorado State University, 1991
- Bachelors, Other, Engineering Physics, Westmont College, 1991

Professional Registration
PE - Civil, 13750, Wyoming, 2012
PE - Civil, 31252, Colorado, 1996

Total Years of Experience
24

Years of Experience with B&V
24

Professional Associations
- Rocky Mountain Section American Water Works Association - Awards Chair
- Water Environment Federation

Office Location
Denver, Colorado

PROJECT EXPERIENCE

City of Wyoming; Transmission Main Evaluation and Booster Station Location; Wyoming, Michigan

Technical Advisor. This project evaluated an existing transmission main, which is approaching its capacity, and evaluated options for expansion including the addition of a booster station or an additional transmission main. Hydraulic modeling was used to evaluate existing conditions and the impact of additional demand on system operations. In addition to developing capital cost opinions, the project looked at the impact of operational costs (energy) on the alternative evaluation. Ms. Burgi developed the project approach and provided technical review of the modeling.

United Government of Wyandotte County; Combined and Sanitary Sewer Overflow Control Plans for Muncie Bluff Creek, Brenner Heights Creek, and Turkey Creek; Kansas City, Kansas

Planning Engineer. The project included flow monitoring, hydraulic model construction, model calibration, capacity analysis, and alternative development to recommend improvements to address SSOs and CSOs in the collection system. Ms. Burgi led the hydraulic modeling team during flow monitoring, hydraulic model development, and alternative development.

City of Aurora; Conveyance Alternatives Study - First, Second, & Third Creek Basins; Aurora, Colorado

Planning Engineer. The project developed detailed sizing and construction costs for two alternatives to convey wastewater from Aurora to regional treatment facilities. It also looked at opportunities for cost sharing with other interested parties. Ms. Burgi led the hydraulic modeling team. Project components included, population and flow projections for the project study area, evaluation of alternate peaking factors, review of previous studies to determine flows from adjacent communities, construction of a spreadsheet model of the interceptor, and developing recommended improvements and timing to address existing and future capacity issues.

Mark Funston, P.E.

Mr. Funston is an Engineering Manager for Black & Veatch with 14 years of experience. His background is in the analysis, planning, design and construction of municipal public works. He specializes in wastewater and water pipeline projects including water distribution and wastewater collection system modeling, master planning, design, and construction phase engineering. Aspects of involvement include project management and project design.

Engineering Manager

Expertise:
Infrastructure Planning and Design

Education
- Masters, Civil Engineering, Wayne State University, 2004
- Bachelors, Civil Engineering, Michigan State University, 2002

Professional Registration
PE - Civil, E-15943, Nebraska, 2016
PE - Civil, 110914, Texas, 2012
PE - Civil, 53609, Michigan, 2006

Total Years of Experience
18

Years of Experience with B&V
18

Professional Associations
- Water Environment Association of Texas - Member

Office Location
Dallas, Texas

PROJECT EXPERIENCE

City of Omaha, Nebraska; Fontenelle Park and Paxton Basin Sewer Improvements; Omaha, Nebraska

Engineering Manager. Responsible for managing and assisting in the final design of Fontenelle Park Lagoon Improvements and Paxton Basin Upstream Sewer Separation projects. Projects include hydraulic modeling, utility, City, and agency coordination, design of new storm sewers, sanitary sewers, road reconstruction, lagoon expansion, screening structures, lagoon inlet and outlet structures and Green improvements.

Coastal Water Authority; Capers Ridge River Intake and Pump Station; Houston, Texas

Project Engineer. Responsible for managing and assisting in the planning and design of a raw water river intake structure, pump station, and other site improvements including electrical building, control building, maintenance building, access roads, boat ramp and river bank protection system. The project will be designed for an ultimate capacity of 500 mgd for transfer of raw water from the Trinity River to Lake Houston.

Trinity River Authority; Northern Region Interceptor Annual Updates; Arlington, Texas

Engineering Manager. Responsible for managing and assisting in the performance of various tasks for the Central, and Ten Mile Creek, Regional Wastewater Systems. Tasks have included interceptor location services, an interceptor ventilation study, and multiple stream bank erosion evaluations using both desktop techniques for evaluation and on-site surface inspections.

Tarrant Regional Water District; Integrated Pipeline Project; Dallas, Texas

Engineering Manager. Responsible for managing and assisting in the preliminary and final design of approximately 30 miles of 108 inch raw water transmission main and associated facilities, with a hydraulic capacity of 347 MGD. The project includes several tunnels, open cut creek and road crossings, yard piping and valves for a 450 MG balancing reservoir, connections to existing 72-inch and 90-inch TRWD pipelines, and metering for the DWU turnout.

Alan Ringhausen, P.E.

Mr. Ringhausen has experience in leading multi-disciplinary teams designing water and wastewater plants, conducting facilities studies, master plans, and providing construction phase services. His responsibilities have included alternative evaluations and costs estimates, hydraulic design of open channel and pumped systems, plant and equipment layout, including biological nutrient removal projects, biosolids projects and process evaluations.

Expertise:
Facilities Studies; Hydraulics (Plant); Master Plans; Pipelines; Wastewater Process; Wastewater Pumping; Wastewater Residuals; Wastewater Reuse; Wastewater Treatment; Water and Wastewater Plant Design

Education
- Masters, Civil Engineering, University of Kansas, 2000
- Bachelors, Civil Engineering, University of Missouri - Rolla, 1995

Professional Registration
PE - Civil, Missouri
PE - Civil, Kansas

Total Years of Experience
23

Years of Experience with B&V
23

Professional Associations
- Water Environment Federation

Office Location
Kansas City, Missouri

PROJECT EXPERIENCE

Kansas City, MO Water Services Department; 87th Street Pump Station Rehabilitation Project; Kansas City, Missouri

Senior Engineering Manager. Rehabilitation and expansion of an existing Pump Station Facility as part of the City of Kansas City's Overflow Control Program (OCP). The pump station increased dry-weather pump station capacity from 60 million gallons a day (mgd) to 80 mgd and installed improved screening facility for pump protection. Design of future wet-weather capacity within the pump station for flows up to 210 mgd.

City of Columbia; Regional Wastewater Treatment Plant-Phase 1 Expansion Project; Columbia, Missouri

Engineering Manager. Design and construction phase services for a major facility expansion consisting of two new treatment trains and retrofit of two existing treatment trains for nitrification/denitrification treatment with an average daily flow of 25 mgd. Conversion of existing aeration basins to fine-bubble aeration diffuser and aeration blower systems. Design of a grit removal basin facility, new and rehabilitated primary clarifiers and final clarifiers, new and rehabilitated sludge pumping stations, centrifuge dewatering facilities, aeration blower facilities, chemical feed facilities.

Tulsa Metropolitan Utility Authority; Comprehensive Wastewater Utility Plan and Strategic Asset Management Program; Tulsa, Oklahoma

Engineering Manager. Conducted site investigations and identified expanded capacity needs within the Tulsa Metropolitan Utility Authority (TMUA) four wastewater treatment facilities and collection system pumping stations. Analysis included analysis of influent pumping, grit handling, primary clarification, intermediate pumping, secondary treatment, biosolids digestion and solids storage/biosolids processing facilities. Prepared recommended capital construction projects based on projected growth, including capital cost opinions over the next 50 years.

Robert Schweiger, P.E.

Project Manager
Infrastructure Planning

Expertise:
Wastewater Collection System Analysis, Hydraulic Computer Modeling and Master Planning, Geographic Information System (GIS) and Automated Mapping and Facilities Management (AM/FM) Integration and Implementation, Pipeline Replacement and Rehabilitation Planning

Education
- BS, Civil Engineering, University of Kansas, 1988,
- Associate of Science, Engineering, Johnson County Community College, 1986

Professional Registration
PE - Civil, 12827, Kansas, 1993

Total Years of Experience
15

Years of Experience with B&V
15

Professional Associations
- American Water Works Association - Member

Office Location
Overland Park, Kansas

Mr. Schweiger has more than 25 years' experience in water and wastewater systems analysis, hydraulic computer modeling and master planning and design and implementation of asset management systems. He has assisted with the development of the Lucity Software, formerly GBA Master Series asset management software, for 12 years including the development of their Sewer, Storm, Street, and Work Management systems. He has extensive experience in hydraulic modeling of Wastewater Collection systems, development and use of computer models for hydraulic analyses and feasibility studies. In addition, Mr. Schweiger has experience in developing pipeline replacement and rehabilitation programs and developing a computer program to assist with the data analysis. Some of Mr. Schweiger's key recent assignments have included:

PROJECT EXPERIENCE

Trinity River Authority, Texas; Lucity Full and Web Implementation Support; Arlington, Texas

Technical Advisor/Project Manager. Working with Authority staff to continually update and improve the Lucity Web environment as well as make improvements for the Authority's roll out of the Lucity Mobile environment. Additional custom reports and forms included in in improving the work flow process for the Authority.

Eastern Municipal Water District; 2015 Wastewater Collection System Master Plan Update; Perris, California

Technical Advisor/Project Engineer. QA/QC review of the wastewater collection system master plans for both Moreno Valley and Temecula Valley service areas including the model development and analysis. Performed model updates and system analyses of the Perris Valley service area including development of the capital improvement projects for the master plan.

City of Springfield, Missouri; Overflow Control Plan; Springfield, Missouri

Technical Advisor/Project Manager. Overseeing and coordinating flow data analysis, model development and analysis and system improvement recommendations for the Overflow Control Plan. Other tasks included in the OCP are long term flow monitoring program, long term hydraulic capacity program, cost effectiveness analysis and future development modeling analysis.

Clark County Water Reclamation District; Paradise Whitney Interceptor Support; Las Vegas, Nevada

Project Engineer. Performed hydraulic model analyses supporting the design of the Paradise Whitney Interceptor sewer (PWI). Analyses included alternative modeling scenarios to determine the effect of a contractor error on the operation of the collection system once the PWI is completed.

Rich Hayslett, P.E.

As a water resources engineer in Black & Veatch's Water Resources Department, Mr. Hayslett's projects have included a wide variety of water quality modeling, hydrologic and hydraulic stormwater modeling, development of industrial wastewater processes, biological treatability studies, and pH process control design. He also has experience performing research work for the treatment of semiconductor CMP wastewater research and UV disinfection technologies.

Technical Lead for Integrated Planning

Expertise:
Process Engineering, Water Resources

Education
- MS, Civil Engineering, Univ Kansas, 2006
- BS, Chemical Engineering, Univ Missouri Columbia*, 1998

Professional Registration
PE - 2004000792, Missouri, 1900

Total Years of Experience
18

Years of Experience with B&V
18

Professional Associations
- Water Environmental Federation
- American Institute of Chemical Engineers

Office Location
Overland Park, Kansas

PROJECT EXPERIENCE

City of St. Peters; Stormwater Masterplan; St. Peters, Missouri

Engineer. Developed a 1-D/2-D model using XP-SWMM/TUFLOW of critical location within downtown St. Peters that was able to identify the extent of surface flooding which was challenging for conventional 1-D model applications due to the flat topography of the area. The model was used to identify the portion of the city at-risk to flooding and used to identify the needed stormwater pump capacity to eliminate flooding.

Metropolitan Sewer District of Greater Cincinnati; Sanitary Sewer Overflows (SSO) 700 Final Remedial Plan; Cincinnati, Ohio

Engineer. Developed and simulated over 20 different options for a critical wet weather treatment facility using EPA SWMM. In addition to providing an alternatives analysis to meet specified environmental performance goals, the results of the modeling were able to answer critical questions related to the existing operations of the facility that had eluded previous engineering studies.

Metropolitan Sewer District of Greater Cincinnati; Werk Westbourne Enhanced High Rate Treatment (EHRT) Preliminary Design; Cincinnati, Ohio

Engineer. Develop 1-D/2-D using XP-SWMM\TUFLOW model of a proposed wet weather treatment facility and a 1-D model of the nearby stream using HEC-RAS. The model formed the basis for both the design of the facility and was used to support facility permit applications.

Metropolitan Sewer District of Greater Cincinnati; Werk Westbourne Enhanced High Rate Treatment (EHRT) Study; Cincinnati, Ohio

Engineer. Performed a model validation of the Upper Muddy Creek CSO SWMM model using EPA SWMM. The model serves as the basis of design for a 106 MGD Enhanced High Rate Treatment facility that will be constructed as part of a Consent Decree with the U.S. EPA. Additional project tasks included design support for EHRT hydraulics and downstream stream hydraulics.

Ed Kobylinski, P.E.

Process Engineer

Expertise:
Wastewater Treatment Systems

Education
- MS, Chemical, University of Missouri-Rolla, 1978
- BS, Chemical, University of Missouri-Rolla, 1977

Professional Registration
PE - 14899, Virginia, 1984

Total Years of Experience
31

Years of Experience with B&V
31

Professional Associations
- Water Environmental Federation - Member
- American Institute for Chemical Engineers - Member

Office Location
Kansas City, Missouri

As a wastewater treatment specialist in the Wastewater Treatment Technology Department, Mr. Kobylinski has over 30 years of experience in the process evaluation and design for industrial and municipal wastewater treatment facilities.

He designs biological treatment facilities for the municipal and industrial sectors. He was behind the design of aerated and anaerobic lagoon facilities for the world's largest lagoon treatment system at Izmir, Turkey. He has evaluated and designed high rate activated sludge, including nitrification and denitrification systems for several municipal clients including the biological treatment facilities for Anheuser Busch, National Starch and the U.S. Army. The U.S. Army facility is unique in that sequencing batch reactors (SBR) are used to denitrify a waste containing 2,300 mg/L of nitrate-nitrogen followed by polishing SBRs to remove excess BOD.

Ed recently completed several wastewater reuse and wastewater segregation projects that involved evaluation of the impact of water chemistry on downstream processes. Prevention of calcium scaling in sour water strippers and air pollution abatement scrubbers to reduce fouling was evaluated. These projects involved wastewater segregation to keep calcium out of the sour water stripper and modifications to scrubber operating conditions to avoid calcium scaling.

PROJECT EXPERIENCE

Upper York Ontario, Canada; Upper York Sewage Servicing Water Reclamation Centre Detailed Design; Upper York, Ontario, Canada

Process Engineer. Performed the detailed process design of the 40 MLD (10 mgd) 4 stage Bardenpho activated sludge plant for TN control and chemical feed and control strategy for the Advanced Membrane Treatment System using pressurized MF and RO systems. Design included the chemical multistage barrier for phosphorus precipitation to meet a 0.02 mg/L effluent TP limit. The design included the bypass of 10% of the flow around the RO system to chemically condition the effluent to reduce corrosivity and effluent toxicity. Wrote the process control narratives for the chloramine biofilm control strategy to include managing the effluent ammonia concentration to meet the 1 mg/L NH3-N permit limit.

Johnson County Wastewater; Blue River Main Wastewater Treatment Plant Train 1 Upgrade to BNR; Johnson County, Kansas

Lead Process Engineer. Supervise the field sampling for species fractionation and Biowin modeling for the upgrade of Train 1 from nitrification only with coarse bubble diffusers to a 3 stage BNR system using tapered fine bubble diffusers. Worked with staff to design the basin upgrades for aeration and creation of the anaerobic and anoxic zones. Compared the need for MLSS fermentation versus supplemental carbon addition for BPR.

James Barnard, Pr. Eng, Ph.D.

Dr. Barnard is recognized internationally for developing the BARDENPHO Process (BARnard DENitrification and PHOsphorus removal), Phoredox (later AO and A2O), the Modified Balakrishnan/Eckenfelder (later called the MLE) process and the Westbank Process. He is currently employed as Global Practice and Technology Leader by Black & Veatch in Kansas City, MO USA.

With over 50 years of experience, Dr. Barnard has done process design for more than 140 nutrient removal plants and extensions around the world and introduced BNR to North America with the design of the Palmetto plant in Florida and the Kelowna plant in British Columbia for nitrogen and phosphorus removal. Most designs for high efficiency nitrogen removal in the Eastern USA are now based on these models. He presents courses and seminars on BNR at various universities and Institutions around the world.

He served as External Examiner for Ph.D. candidates from the Universities of Cape Town, Pretoria, British Columbia, Queensland, Manitoba, Purdue and Stavanger in Norway. He also served as Adjunct Professor at the University of British Columbia and taught courses in biological nutrient removal at the University of Queensland Winter School for ten consecutive years.

He also served on several Water Environmental Research Foundation Subcommittees, notably Methods for Wastewater Characterization in Activated Sludge Modeling 99-WWF-3, and presently on Project 01-CTS-3, Biological Phosphorus Removal Survey and Investigation and RFP 02-CTS-1: Sustainable Technology for Achieving Very Low Nitrogen (N) and Phosphorus (P) Effluent Levels. Presently serving as International Advisory Team for Efficient, Cost-Effective Nutrient Removal from Wastewater 06-NUTR-1.

He served or is serving on the Technical Advisory Committee for Nitrogen Removal for the City of New York, District of Columbia Water and Sewage Authority (DCWASA), Winnipeg MB, Canada; Los Angeles, CA and Jacksonville, FL

Previous Employment: Senior Research Officer NIWR, 1971 to 1974; Director and later President of Wates, Meiring & Barnard in Pretoria, 1974 to 1993; Reid Crowther/Vancouver B.C./ Director/1993-1998.

Expertise:
Developer of BARDENPHO and Phoredox Processes (AO and A2O), the first and most successful biological nutrient removal process configurations

Education
- Doctorate, Water Resources and Environmental Health Engineering, Vanderbilt University, 1971
- MS, Environmental Engineering, University of Texas Austin, 1969
- BS, English (Honorary), University of Pretoria, 1967, South Africa
- BS, B.Eng., University of Stellenbosch RSA, 1956, South Africa

Professional Registration
PE - South Africa, 1975

Total Years of Experience
51

Years of Experience with B&V
51

Professional Associations
- Water Environment Federation - Member
- American Water Works Association - Member

Office Location
Kansas City, Missouri

Gary Hunter, P.E.

As a specialist assigned to Black & Veatch's Advanced Environmental Technologies Division, Mr. Hunter is responsible for process evaluation for wastewater treatment facilities. In this role he, is responsible for liquid and residuals process trains of the treatment plant. In this work, he has gained expertise in the design, operation and application various process systems.

Technical Advisor: Tertiary Treatment & Water Reuse

Specialization:
Wastewater Tertiary Filtration Wastewater Disinfection

Office Location
Kansas City, MO

Education
- MS, Civil Engineering, Brigham Young University, 1985
- BS, Civil Engineering, Brigham Young University, 1984

Professional Registration
PE – 1991, KS, 12244
Board Certified Environmental Engineer – 2009, 09-20034

Professional Associations
- American Society of Civil Engineers
- IUVA Wastewater Subcommittee
- Water Environmental Federation Disinfection Committee
- Water Environment Federation

Year Career Started
1985

Year Started with B&V
1985

PROJECT EXPERIENCE

Austin Water Utility; Filter Rehabilitation Project Walnut Creek WRF; Austin, TX

Sr. Process Engineer. Reviewed various filter technologies for replacement of a 120 mgd deep bed anthracite filter complex. Technologies that were examined ranged from sand filters to membranes. Develop methods for evaluation of various filtration alternatives. Developed concept design for retrofit using two types of cloth media filtration equipment. Prepared capital and operating costs for various alternatives. Prepared specifications for the deep bed filtration alternative that was identified as most cost effective alternative.

Orange County Utilities; Southwest WRF Plant Expansion; Orlando, FL

Sr. Process Engineer. Concept design for retrofit of cloth media filtration equipment into existing upflow filtration structures. Conducted an evaluation of potential cloth media alternatives capable of be used in the existing structure. Developed capital and operating costs for various alternatives.

Orange County Utilities; Northwest WRF Plant Expansion; Orlando, FL

Sr. Process Engineer. Concept design for retrofit of cloth media filtration equipment into existing upflow filtration structures. Conducted an evaluation of potential cloth media alternatives capable of be used in the existing structure. Developed capital and operating costs for various alternatives.

Johnson County Wastewater; Wastewater Filtration Study; Johnson County, KS

Sr Process Engineer. Evaluated four types of filtration equipment (traveling bridge, upflow, cloth disc, and fuzzy) to remove suspended solids from wastewater effluent. Prepared conceptual designs for 12 mgd and 24 mgd alternatives for selected filtration equipment.

Teneska; Wastewater Reuse Treatment Facilities and Transmission Main for Taylorville Energy Center; Taylorsville, IL

Sr. Process Engineer. Project involved assisting Teneska, a private power developer, with permitting the proposed Talylorville Energy Center (TEC) power plant. Teneska had approached the Sanitary District of Decatur for supplying 3.0 mgd of high quality water for use as power plant cooling water from the Decatur Wastewater Treatment Plant. Developed design documents and assisted Tenaska in obtaining a permit from IEPA. The high quality water required installation of tertiary filtration system for phosphorus removal and production of effluent of low turbidity

Scott Carr, P.E., BCEE

Technical Advisor - Biosolids Specialist

Specialization:
Biosolids and wastewater treatment

Office Location
Kansas City, MO

Education
- MS, Environmental Systems Engineering, Clemson University, 1985
- BS, Agricultural Engineering, Auburn University, 1983

Professional Registration
PE – 1989, MO
PE – 1989, KS
PE – 1989, MA
PE – 1989, IA
PE – 1989, NC

Professional Associations
- Water Environment Federation
- American Society of Civil Engineers

Year Started with B&V
Rejoined 2015
1985-2006

Mr. Carr is Black & Veatch's Global Practice and Technology Leader for biosolids and residuals management, with 30 years of experience. He has focused his career on biosolids and residuals management, including processing and beneficial use of biosolids. His expertise encompasses all aspects of biosolids management, from master planning through design and construction administration.

Industry Related Professional Activities. Mr. Carr participated in the preparation of the WEF MOP8 Wastewater Process Design Manual revision, published in early 2010, serving as the lead author for the rewriting of the thermal drying section. He also served as an author of the Emerging Technologies chapter for the EPA's revised Sludge Processing Manual, published in 2012. He participated in the development of the ASCE/AWWA/USEPA Technology Transfer Handbook: Management of Water Treatment Plant Residuals and participated on an EPA/USDA task force to develop a manual on the storage of biosolids. He currently leads a Dryer Taskforce for the WEF BioEnergy Subcommittee. Mr. Carr is a past chair of the Missouri WEA Biosolids Committee and a past chair of the AWWA's Water Quality Division Water Plant Residuals Management Committee.

PROJECT EXPERIENCE

City of Arlington; Thermal Hydrolysis and Digestion Facilities Design; Arlington, TX

Technical Specialist. As part of the design team for a new thermal hydrolysis and anaerobic digestion system for a 167 MGD facility, served as the technical lead for the evaluation of sidestream treatment requirements, including P recovery through struvite precipitation. He also led an evaluation of the viability of implementing a combined heat and power generation system, as well as the viability of thermal drying.

Des Moines Water Reclamation Authority; Digester Improvements and Bioenergy Master Plan; Des Moines, IA

Project Manager. Scott managed the design of improvements to six 115 ft diameter digesters and to the high-strength waste receiving facility. Improvements included new hauled waste receiving rock boxes, submerged fixed concrete covers on five primaries, mechanical mixing for the five primaries and pumped recirculation mixing for the secondary, gas handling systems, and a gas membrane cover for the secondary. In addition to physical improvements to the digesters, the plan evaluated alternative technologies for using biogas, biogas storage options, waste activated sludge pretreatment options, and thermophilic processes to enhance system capacity.

Derek Wurst, P.E.

Derek has dedicated his career towards the assessment of water and wastewater infrastructure to help clients extend the useful life of their assets. He brings more than 15 years of focused condition assessment experience in the evaluation of water and wastewater facilities. Derek has directed and provided technical assistance in the analysis of water transmission, sanitary sewer and storm water collection systems, pipelines, pump stations, and treatment facilities. Derek brings hands-on knowledge to provide tangible and appropriate condition assessment services with verifiable results. His unique blend of effective communication and technical expertise provide the skills necessary to convey the intricacies of complex projects.

Expertise:
Condition Assessment of Water and Wastewater Facilities

Education
- BS, Civil/Environmental Engineerin, Humboldt State University, 2000

Professional Registration
- PE - Mechanical, M 32866, California, 2006
- Pipeline & Manhole Assessment Certification Program, T-705-2290, 2007

Total Years of Experience
21

Years of Experience with B&V
3

Professional Associations
- Water Environment Federation - Member

Office Location
Walnut Creek, California

PROJECT EXPERIENCE

East Bay Municipal Utility District; Temescal Interchange Pipe and Casing Leak Evaluation; Oakland, California

Project Manager. Completed a condition assessment of approximately 500 linear feet of a 36-inch ML&CS pipe and 500 linear feet of a 72-inch Reinforced Concrete Pipe (RCP). The AWWA C303 36-inch bar-wrapped steel cylinder ML&CS pipe is encased in the 72-inch RCP pipe underneath Highway 24. A leak was discovered and it was necessary to conduct a confined space entry to evaluate the cause. Conducted one evaluation in the annular space between the 72-inch casing and the 36-inch pipe and another evaluation inside the 36-inch pipe. The purpose of the assessment was to determine the overall condition of the pipeline. Joints that were un-mortared, displaced more than 20%, and/or separated by more than ½ inch were identified. Cracks in the pipeline were identified by clock position location and by size. The locations of significant spalled and disbonded cement mortar lining and coating were identified. It was determined that the pipe failure occurred at a spiral weld seam that had separated. Removing the concrete mortar it was verified that the seam was improperly welded at the time of manufacture. The bar-wrap reinforcing steel rods and steel cylinder had only minor surface corrosion. Based on the condition assessment findings, repairs were developed to get the pipe back in service with minimal delay.

Vista Irrigation District; Water Supply Planning Study; Vista, California

Project Manager. The District owns and operates a gravity flume and pressurized siphon potable water conveyance system extending 11.25 miles. Built in the 1920s, the system is a combination of above-ground, gunite open-channel flow sections with several steel and concrete siphons. Provided condition assessment expertise to perform direct field observations to document the existing flume benches and siphon pipe conditions and to recommend specific repair measures for the system. Conducted partial CCTV documentation from predetermined access locations to identify sections for follow-up manned entry assessment to physically evaluate conditions. The results concluded that despite the age of the flume conveyance system, it is in good condition and with some investment in rehabilitation, could conceivably continue to serve the District's for the next 20 years.

Mark Steichen, P.E.

Mr. Steichen is Director of the Wastewater Treatment Technology Department of Black & Veatch's Water Technology Group. In this role, he leads a group of process engineers dealing with a wide range of advanced wastewater treatment technologies for preliminary and primary treatment, wet weather flow management, chemical and biological nutrient removal, tertiary filtration and disinfection, and residuals management. He specializes in biological nutrient removal and high rate fixed film processes such as integrated fixed film activated sludge (IFAS), moving bed bioreactors (MBBR). Mr. Steichen has been responsible for many aspects of environmental engineering, including process evaluation and selection, facility design, equipment specification, start-up and training, and troubleshooting.

PROJECT EXPERIENCE

Sacramento Regional County Sanitation District; EchoWater Project - BNR Facility; Sacramento, California

Lead Process Engineer. Lead process engineer for the design of the new 181 mgd 5-Stage BNR complex. The BNR configuration has the flexibility to operate with or without biological phosphorus removal and mixed liquor fermentation. Dynamic modeling used to optimize design considering diurnal and seasonal load variations and carbon limitation for the support of both biological N&P removal.

San Diego, California; Fallbrook Wastewater Treatment Plant; San Diego, California

Process Specialist. Lead process engineer on HAZOP for the Fallbrook WWTP expansion project. Design included the expansion and upgrade of the existing activated sludge process, tertiary filtration, disinfection, and biosolids processing facilities.

Midwest City, Oklahoma; Wastewater Treatment Plant Nutrient Removal Upgrade; Midwest City, Oklahoma

Process Specialist. Lead process engineer responsible for process evaluation, selection, and design of improvements to upgrade the existing trickling filter and rotating biological contact (RBC) plant for nutrient removal.

City of Danbury, Connecticut; Danbury Wastewater Treatment Facility Phosphorus Removal Facilities Planning Study; Danbury, Connecticut

Process Specialist. Serving as process lead for the Danbury WWTF Phosphorus Removal Facilities Planning Study. The City of Danbury is under a Consent Order from the Connecticut DEP to reduce phosphorus in their WWTF discharge to less than 0.2 mg/L, while achieving high level nitrogen removal to meet their Long Island Sound nitrogen WLA. The Facilities Planning Study is focused on creative use of existing facilities, including trickling filters, to reduce implementation as well as operational costs.

Associate Vice President, Director of Wastewater Treatment Technology Department

Expertise:
Wastewater Treatment Plant Design

Education
- MS, Envir Health, Univ Kansas, 1993
- BS, Civil Engineering, North Dakota St U Fargo, 1990

Professional Registration
PE - 12954, Kansas, 1993

Total Years of Experience
27

Years of Experience with B&V
27

Professional Associations
- Water Environmental Federation - Member
- International Water Association - Member

Office Location
Kansas City, Missouri

Bryan W Dickerson, GISP

Mr. Dickerson is a Regional Practice Leader for Asset Management and the National Lead for Asset Management Information Solutions supporting Black & Veatch's Water Division. He has over 20 years of program management, consulting, and system implementation and integration experience on projects for municipal government and water, wastewater, and stormwater utilities clients. He specializes in asset management program development utilizing ISO 55000 and PAS 55 guidelines, CMMS solution requirements development, systems implementation and refinement, web and mobile application development, and systems integration. Having led organizations in both the private and public sector, Mr. Dickerson provides a unique experience in leading asset management and IT programs both from the consultant and client perspectives.

ASSET MANAGEMENT REGIONAL PRACTICE LEADER; NATIONAL ASSET MANAGEMENT INFORMATION SOLUTIONS LEAD

Expertise:
Asset management program development (ISO 55000, PAS 55), Agile application design and development, CMMS and GIS solution implementations including: Requirements Analysis, Implementation Consulting, Systems Integration and Project Management Services for Engineering Firms, Utilities, Municipalities and Governmental Agencies

Education
- BS, Geography, Northwest Missouri State, 1996, United States

Total Years of Experience
21.5

Years of Experience with B&V
2.4

Professional Associations
Institute of Asset Management (IAM) - Member
Society for Maintenance & Reliability Professionals (SMRP) - Member
Water Research Foundation (WRF) - Member
Water Environmental Federation (WEF) - Member
AWWA Strategic Management Practices Committee - Member
American Water Works Association (AWWA) - Member

Office Location
Kansas City, Missouri

PROJECT EXPERIENCE

City of Mesa, Arizona; Cityworks Implementation for Signal Butte Water Treatment Plant; Mesa, AZ

Asset Management Lead. Currently leading the implementation of Cityworks Asset Management System (AMS) for Signal Butte Water Treatment Plant. Project tasks include asset registry and geodatabase design for facilities/vertical assets, asset data development from BIM and construction documentation, asset data loading, Cityworks software configuration, system testing, end-user training, go-live support, SCADA integration planning, and integration with SharePoint content and document management platform for maintenance plans and O&M manuals.

Kansas City, Missouri Water Services Department; Operations & Maintenance Support and RCM Program Development; Kansas City, MO

Asset Management & RCM Lead. Lead for all asset management, maintenance optimization and Reliability Centered Maintenance (RCM) program development tasks for project for Wastewater Treatment Division (WWTD). Key project tasks included RCM program assessment and implementation plan development, asset identification and naming standards development, asset inventory and condition assessment at wastewater treatment plants, assessment and optimization of Infor Public Sector CMMS solution, asset criticality and risk prioritization methodology development, Failure Modes Effects Analysis (FMEA) facilitation, Predictive Maintenance (PdM) program support, and inventory management optimization.

Johnson County Stormwater Management Program; 2016 Strategic Plan Implementation; Olathe, KS

Asset Management Lead. As part of strategic plan to move towards a watershed-based organization for management of stormwater program within Johnson County, Kansas, provided asset management support for System Management subcommittee and development of asset management-based approach to system management. Developed high-level asset criticality and risk prioritization criteria and began development of Strategic Asset Management Plan (SAMP) to support new approach to system management for Stormwater Management Program (SMP).

Pam Lemoine

Ms. Lemoine's experience encompasses a diverse range of financial and economic studies for wastewater, water and stormwater utilities. She has extensive experience in the conduct of strategic financial planning studies, cost of service and rate design studies, as well as financial capability analyses and affordability assessments associated with long term control plan development required as a result of federal and state consent decrees. She has assisted utilities in developing strategies to address affordability, directly participating in negotiations with state and federal regulators. Ms. Lemoine's experience also includes the development of policies that address a utility's objectives while meeting customers' needs. She has developed performance measures to allow utilities to better track efficiency and achievement of established objectives.

Project Manager

Specialization:
Strategic Financial Planning, Water and Wastewater Rates, Consent Decree Negotiation, Affordability, Stormwater User Fees, Funding and Bond Feasibility, Organizational Efficiency, Citizen Work Groups, Public Information

Education
- B.S., General Engineering, University of Illinois – Urbana-Champaign

Professional Registration
Professional Engineer: Washington

Professional Associations
- WEF
- AWWA
- NACWA – Utility & Resource Management Committee member, Legal Affairs Committee
- USEPA Environmental & Financial Advisory Board member

Year Career Started
1987

Year Started with B&V
1995

REPRESENTATIVE PROJECT EXPERIENCE

Cost of Service/Rate Design Experience

- Metropolitan Sewer District of Greater Cincinnati, Ohio; Revenue Requirement, Cost of Service, Rate Design, and Financial Policy Analyses; 2005-ongoing
- Greater Cincinnati Water Works; Revenue Requirement, Cost of Service, Rate Design, and Financial Policy Analyses; 2011-2013, 2014-2015, 2016-ongoing
- Sanitation District No. 1 of Northern Kentucky; Wastewater and Storm Water Financial Planning and Rate Study; 2012-2013
- City of Shreveport, LA; Comprehensive Cost Allocation/Rate Study; 2013-14
- Jefferson County, Alabama Receiver; Cost of Service Analysis and Rate Design,; 2010-2011
- Greater Cincinnati Water Works, Cincinnati, Ohio; Litigation Support Services; 2011-2012

Affordability Analysis and Consent Decree Negotiation Support Experience

- Sanitation District No. 1 of Northern Kentucky; Affordability Analysis and Consent Decree Negotiation Support Services; 2013-ongoing
- Metropolitan Sewer District of Greater Cincinnati, Ohio; Affordability Analysis and Consent Decree Negotiation Support Services; 2006-2009; 2015-ongoing
- City of Columbus, OH; Blueprint Columbus Affordability Analysis; 2014-2015
- City of Springfield, MO; LTCP Affordability Analysis; 2014
- Allegheny County Sanitation District; Consent Decree Oversight Services; 2012-2013
- City of Reading, Pennsylvania; Comprehensive Revenue Requirement and Affordability Analysis; 2009-2010

PUBLICATIONS AND PRESENTATIONS

"Environmental Regulations: Can They Be Flexible and Affordable for Local Governments?," National League of Cities, Congressional Cities Conference, Washington D.C., March 2015. (Moderator)

"The Great Beyond: Congratulations, You are High Burden – Now What?," NACWA National Clean Water Law Seminar, St. Pete Beach, FL, November 2014. (co-presenter).

Anna White

Principal Consultant

Specialization:
Water, Wastewater and Stormwater Utility Cost of Service Rate Studies; Financial Planning; Financial Bond Feasibility Studies; System Development Fees; Indirect Cost Allocations; Stormwater Utility Implementation

Education
- M.B.A., Finance, University of Kansas, 1998
- B.G.S., Economics, University of Kansas, 1994

Professional Associations
- American Water Works Association, Rates and Charges Committee, Member - Present
- Water Environmental Federation

Year Career Started
1998

Year Started with B&V
1998

Ms. White has served as a project manager for Black & Veatch's management consulting business on projects involving cost of service and rate determination, revenue bond determination and financial reviews of operations for water, wastewater and storm water utilities in the public sector. Ms. White also has experience system development fees, indirect cost allocations, and stormwater utility implementation. Her economics background and experience with computer modeling and software applications have been utilized in developing financial analyses of municipal water and wastewater utilities.

Ms. White is an active member of the American Water Works Association (AWWA) and is a current member of AWWA's Rates and Charge Committee, the industry-leading organization for water rate setting in the United States.

PROJECT EXPERIENCE

Charleston Water System; Charleston, South Carolina

Black & Veatch has provided revenue bond, rate design and other financial service to the Charleston Water Service for several decades. Ms. White has served as project analyst for all financial and engineering feasibility studies and all comprehensive cost-of-service rate studies since 1998 and has served as project manager since 2004. The comprehensive water and wastewater rate study and rate schedules were recently updated in 2013. In addition, contracts with wholesale customers were reviewed and updated and water and wastewater system development fees were revised. Current work includes development of rates for raw water customers, creation of a surcharge for excess ammonia, and development of a water rate model for a water wholesale customer.

Tulsa Metropolitan Utility Authority (TMUA); Tulsa, Oklahoma

In 2012, Ms. White served as a managing consultant on a team that performed a comprehensive legal, engineering and financial evaluation of Tulsa's water and wastewater systems where she assisted with the tasks associated with financial condition, planning and reporting analysis. The analysis of financial viability and sustainability recognized the costs required to maintain effective balances between debt and assets as well as operating costs and revenues. Revenues were reviewed for sufficiency to maintain adequate reserves, support bond ratings and invest in future needs. Commonly used performance ratios for the utility industry were identified and calculated for TMUA. Alternative rate structures were proposed which met the goals of the community. The team is beginning phase 2 of the project, which includes implementation of recommendations from Phase 1. Ms. White will lead updating and improving the water and wastewater rate models and assisting with implementation of performance management.

Kyle Lucas

Project Manager

Expertise:
Air Dispersion Modeling; Air Permitting; Business Development; Clean Air Act; Consulting Engineering Services; Decommissioning; Environmental; Feasibility Studies; Project Management; Strategic Planning; Thought Leadership

Education
- BS, Atmospheric Science, Atmospheric Science, University of Kansas, 1993

Total Years of Experience
31

Years of Experience with B&V
23

Professional Associations
- Air and Waste Management Association - Member
- American Meteorological Society - Member

Office Location
Overland Park, Kansas

Kyle Lucas is a Project Manager assigned to Black & Veatch's Environmental Services Section of the Power Generation Service Area within Black & Veatch Energy with 21 years of industry experience. His responsibilities include environmental project management encompassing complex plant compliance; air quality control studies; Clean Air Act/New Source Review (NSR) compliance; and consulting services related to new and modified power generating plants and industrial facilities. His primary responsibilities include assisting clients in developing compliance strategies and managing specific permitting and licensing projects, particularly for traditional coal fired power plants and gas/oil combustion turbine power plants.

He has participated in determining how impacts from multi-pollutant legislation can potentially affect asset management for electric generating sources. He identified air, water, and waste regulatory drivers impacting the value of coal and oil fired facilities; and evaluated potential air quality control technology as mitigation options and the potential economic impact of these drivers. Lucas' current responsibilities include project management encompassing air quality control studies, combustion turbine technology, strategic planning, siting analyses for new equipment, and integration of planning/development activities. He regularly assists clients in their planning activities for potential retirement, decommissioning and demolition of their existing units, as well as compliance with EPA's rules for water intake structures, coal combustion residue and Effluent Limitation Guidelines.

PROJECT EXPERIENCE

City of Topeka, Kansas; Water Treatment Plant; Kansas

Air Quality Scientist V. Acted as Project Manager on behalf of the WTP to update the plant's Risk Management Plan due to process changes and correct outstanding deficiencies to bring the plant into compliance. Duties also included facilitating the plant's Hazard Review (HR) revalidation, developing RMP component workshops, training, and RMP renewal process with EPA for the chlorine process. Additionally, conducted a RMP 3-year compliance audit for the Plant. The revalidation, training, renewal, and audit were conducted as part of the requirement under 40 CFR Part 68.

City of Hannibal Missouri; Water Treatment Plant and Wastewater Treatment Plant; Missouri

Air Quality Scientist V. Facilitated the plant's 5-year Risk Management Plan (RMP) Hazard Review (HR) revalidation and RMP renewal process with EPA for the chlorine process. Additionally, conducted a RMP 3-year compliance audit for the Plant. The revalidation, renewal, and audit were conducted as part of the requirement under 40 CFR Part 68.

City of Fayetteville
RFQ 20-01, Engineering and Architectural Services
SECTION B: Vendor References

The following information is required from all firms so all statements of qualification may be reviewed and properly evaluated:

COMPANY NAME: Black & Veatch Corporation

NUMBER OF YEARS IN BUSINESS: 104 HOW LONG IN PRESENT LOCATION: Date of Incorporation: 11/16/1998

TOTAL NUMBER OF CURRENT EMPLOYEES: 10,014 FULL TIME PART TIME

NUMBER OF EMPLOYEES PLANNED FOR THIS CONTRACT: N/A FULL TIME N/A PART TIME

PLEASE LIST FOUR (4) REFERENCES THAT YOU HAVE PREVIOUSLY PERFORMED CONTRACT SERVICES FOR WITHIN THE PAST FIVE (5) YEARS (All fields must be completed):

1. Kansas City Missouri Water Service Division
COMPANY NAME

Kansas City, MO 64130
CITY, STATE, ZIP

Kelly Finn, Project Manager
CONTACT PERSON

(816) 513-0351
TELEPHONE

(816) 513-0288
FAX NUMBER

kelly.finn@kcmo.org
E-MAIL ADDRESS

2. City of Springfield
COMPANY NAME

Springfield, MO 65802
CITY, STATE, ZIP

Errin Kemper, Director
CONTACT PERSON

(417) 864-1910
TELEPHONE

(417) 864-2052
FAX NUMBER

ekemper@springfieldmo.gov
E-MAIL ADDRESS

3. Johnson County Wastewater
COMPANY NAME

Mission, KS 66202
CITY, STATE, ZIP

Tamara Lorenzen, Managing Engineer
CONTACT PERSON

(913) 715-8777
TELEPHONE

(913) 715-8501
FAX NUMBER

Tamara.lorenzen@jcw.org
E-MAIL ADDRESS

4. Tulsa Metropolitan Utility Authority
COMPANY NAME

Tulsa, OK 74103
CITY, STATE, ZIP

Clayton Edwards, Director
CONTACT PERSON

(918) 596-7810
TELEPHONE

(918) 699-3170
FAX NUMBER

cedwards@cityoftulsa.org
E-MAIL ADDRESS

1. Disclosure Information

Proposer must disclose any possible conflict of interest with the City of Fayetteville, including, but not limited to, any relationship with any City of Fayetteville employee. Proposer response must disclose if a known relationship exists between any principal or employee of your firm and any City of Fayetteville employee or elected City of Fayetteville official.

If, to your knowledge, no relationship exists, this should also be stated in your response. Failure to disclose such a relationship may result in cancellation of a purchase and/or contract as a result of your response. This form must be completed and returned in order for your bid/proposal to be eligible for consideration.

PLEASE CHECK ONE OF THE FOLLOWING TWO OPTIONS, AS IT APPROPRIATELY APPLIES TO YOUR FIRM:

__X__ 1) NO KNOWN RELATIONSHIP EXISTS

_____ 2) RELATIONSHIP EXISTS (Please explain): _____

I certify that; as an officer of this organization, or per the attached letter of authorization, am duly authorized to certify the information provided herein are accurate and true; and my organization shall comply with all State and Federal Equal Opportunity and Non-Discrimination requirements and conditions of employment.

2. Additional Information

At the discretion of the City, one or more firms may be asked for more detailed information before final ranking of the firms, which may also include oral interviews. NOTE: Each Proposer shall submit to the City a primary contact name, e-mail address, and phone number (preferably a cell phone number) where the City selection committee can call for clarification or interview via telephone.

Name of Firm: Black & Veatch Corporation

Name of Primary Contact: Jeff Henson, P.E.

Title of Primary Contact: Associate Vice President

Phone#1 (cell preferred): (816) 605-9577 Phone#2: (913) 458-3410

E-Mail Address: HensonJ@bv.com

TAX ID#: 43-1833073 DUNS #: 09-225-5939 IR3 Cage Code: 1PGJ9

3. Please acknowledge receipt of addenda for this invitation to bid, request for proposal, or request for qualification by signing and dating below. All addendums are hereby made a part of the bid or RFQ documents to the same extent as though it were originally included therein. Proposers/Bidders should indicate their receipt of same in the appropriate blank listed herein. Failure to do so may subject vendor to disqualification.

ADDENDUM NO.	SIGNATURE AND PRINTED NAME	DATE ACKNOWLEDGED

4. Pursuant Arkansas Code Annotated §25-1-503, the Contractor agrees and certifies that they do not currently boycott Israel and will not boycott Israel during any time in which they are entering into, or while in contract, with any public entity as defined in §25-1-503. If at any time during contract the contractor decides to boycott Israel, the contractor must notify the contracted public entity in writing.

5. Contractor agrees that no solicitation of City employees will take place.

6. As an interested party on this project, you are required to provide debarment/suspension certification indicating in compliance with the below Federal Executive Order. Certification can be done by completing and signing this form. Federal Executive Order (E.O.) 12549 "Debarment and Suspension" requires that all contractors receiving individual awards, using federal funds, and all sub-recipients certify that the organization and its principals are not debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency from doing business with the Federal Government.

7. Signature certifies that neither you nor your principal is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency.

Questions regarding this form should be directed to the City of Fayetteville Purchasing Division.

NAME: Jeff Henson

COMPANY: Black & Veatch Corporation

TAX ID: 43-1833073

PHYSICAL ADDRESS: 8400 Ward Parkway, Kansas City, MO 64114

MAILING ADDRESS: 8400 Ward Parkway, Kansas City, MO 64114

PHONE: (816) 805-9577 FAX: (913) 458-3410

E-MAIL: HensonJ@bv.com

Signed by :

SIGNATURE: _____

PRINTED NAME : Jeff Henson

TITLE: Associate Vice President

DATE: January 22, 2020

SECTION E: 2020 Annual Statement of Qualifications Summary Form

ATTENTION: This form shall be completed and returned with EACH SUBMITTED Statement of Qualification. The City will utilize the selection marked by each firm to correspond with the scope of work for each project.

NAME OF FIRM: Black & Veatch Corporation

SUMMARY STATEMENT:
Proposer should provide summary information on this form by checking the areas of expertise based on experience and qualifications.

This form must be completed and returned in order for your proposal to be eligible for consideration.

	Airport		Parks: Campground Planning
	Architecture		Parks: Land Dedication Fees Consultant
	Bridges		Parks: Aquatics Consultant
	Civil/Structural Design		Site Utility
X	Construction Administration		Studio Design
X	Drainage Design, Analysis, & Planning	X	Storm Water Management
X	Electrical	X	Stormwater Modeling
	Environmental Analysis, Remediation, & Permitting	X	Stormwater Design
X	Environmental Water Services		Structural Design
X	Floodplain Services		Surveying
X	GIS Mapping	X	Sustainability Design
X	Geotechnical Engineering		Testing Services: Soil/Materials
X	Hydrology		Traffic Studies
	Independent Fee Estimates	X	Value Engineering
	Interior Design	X	Wastewater Design
	Landscape Architecture	X	Wastewater Management
	LEED Certification	X	Wastewater Modeling
	Lighting Design	X	Wastewater Rate Studies
	Master Planning: City/Government	X	Wastewater SSES
	Master Planning: Parks	X	Water/ Sewer Rate Studies
	Master Planning: Streets	X	Water Design
X	Master Planning: Wastewater	X	Water Management
X	Master Planning: Water	X	Water Modeling
X	Mechanical		Water Quality Monitoring
	Natural Resource Planning		Wetlands

2.) PLEASE FILL OUT THE SECTION BELOW AND SUBMIT THIS FORM WITH YOUR STATEMENT OF QUALIFICATIONS:

a) I, as an officer of this organization, or per the attached letter of authorization, am duly authorized to certify the information provided herein are accurate and true;

Black & Veatch Corporation
Name of Firm

Jeff Henson
Printed Name

Signature

Associate Vice President
Title

January 22, 2020
Date

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 7/1/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Derek Spresser
Lockton Companies 444 W. 47th Street, Suite 900 Kansas City MO 64112-1906	PHONE (A/C, No, Ext): 816-960-9060 FAX (A/C, No): E-MAIL ADDRESS: DSpresser@lockton.com

INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A :	Zurich American Insurance Company	16535
INSURER B :	American Zurich Insurance Company	40142
INSURER C :	Lexington Insurance Company	19437
INSURER D :		
INSURER E :		
INSURER F :		

INSURED
Black & Veatch Corporation
11401 Lamar
Overland Park, KS 66211
United States

COVERAGES **CERTIFICATE NUMBER:** 370738 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY							
A	CLAIMS-MADE [X] OCCUR							
A	X Contractual			GLO 0139245 – Large Works/Small Works GLO 4641358 - Corporate GLO 4641367 – Divisional Works	11/1/2019 11/1/2019 11/1/2019	11/1/2020 11/1/2020 11/1/2020	EACH OCCURRENCE	$ $1,000,000
	X PD & C/O & XCU	X					DAMAGE TO RENTED PREMISES (Ea occurrence)	$ $300,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						MED EXP (Any one person)	$ $10,000
	[X] POLICY [ ] PRO-JECT [ ] LOC						PERSONAL & ADV INJURY	$ $1,000,000
	OTHER:						GENERAL AGGREGATE	$ $2,000,000
							PRODUCTS - COMP/OP AGG	$ $2,000,000
								$
A	AUTOMOBILE LIABILITY							
	X ANY AUTO			BAP 4641355	11/1/2019	11/1/2020	COMBINED SINGLE LIMIT (Ea accident)	$ $1,000,000
	X OWNED AUTOS ONLY [ ] SCHEDULED AUTOS	X					BODILY INJURY (Per person)	$
	X HIRED AUTOS ONLY [X] NON-OWNED AUTOS ONLY						BODILY INJURY (Per accident)	$
							PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB [ ] OCCUR							
	EXCESS LIAB [ ] CLAIMS-MADE						EACH OCCURRENCE	$
	DED [ ] RETENTION $						AGGREGATE	$
								$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						X PER STATUTE [ ] OTH-ER	
B	ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [N]	N / A		WC 0139244 WC 4641353 (AOS) WC 4641354 (ID, MA, WI)	11/1/2019 11/1/2019 11/1/2019	11/1/2020 11/1/2020 11/1/2020	E.L. EACH ACCIDENT	$ $1,000,000
A	(Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ $1,000,000
							E.L. DISEASE - POLICY LIMIT	$ $1,000,000
C	Professional Liability			026030198	11/1/2019	11/1/2020	Professional Limit	Each Claim and Annual Aggregate Limit: $1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Project #: THIS INSURANCE CERTIFICATE HAS BEEN ISSUED FOR INFORMATIONAL PURPOSES;

Please see page 2 for additional information

CERTIFICATE HOLDER

CERTIFICATE HOLDER
SAMPLE
SAMPLE, SAMPLE SAMPLE
United States

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Joseph M Arnold

ADDITIONAL REMARKS SCHEDULE

AGENCY	NAMED INSURED
Lockton Companies 444 W. 47th Street, Suite 900 Kansas City MO 64112-1906	Black & Veatch Corporation 11401 Lamar Overland Park, KS 66211 United States
	EFFECTIVE DATE: 11/1/2019

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 **FORM TITLE:** Certificate of Liability Insurance

The General Liability Policy provides primary and non-contributory coverage.

The Automobile Liability Policy provides primary and non-contributory coverage.

Upon award of contract, CERTIFICATE HOLDER will be included as an Additional Insured as applicable and required by executed, written contract on the following policies:
General Liability
Automobile Liability