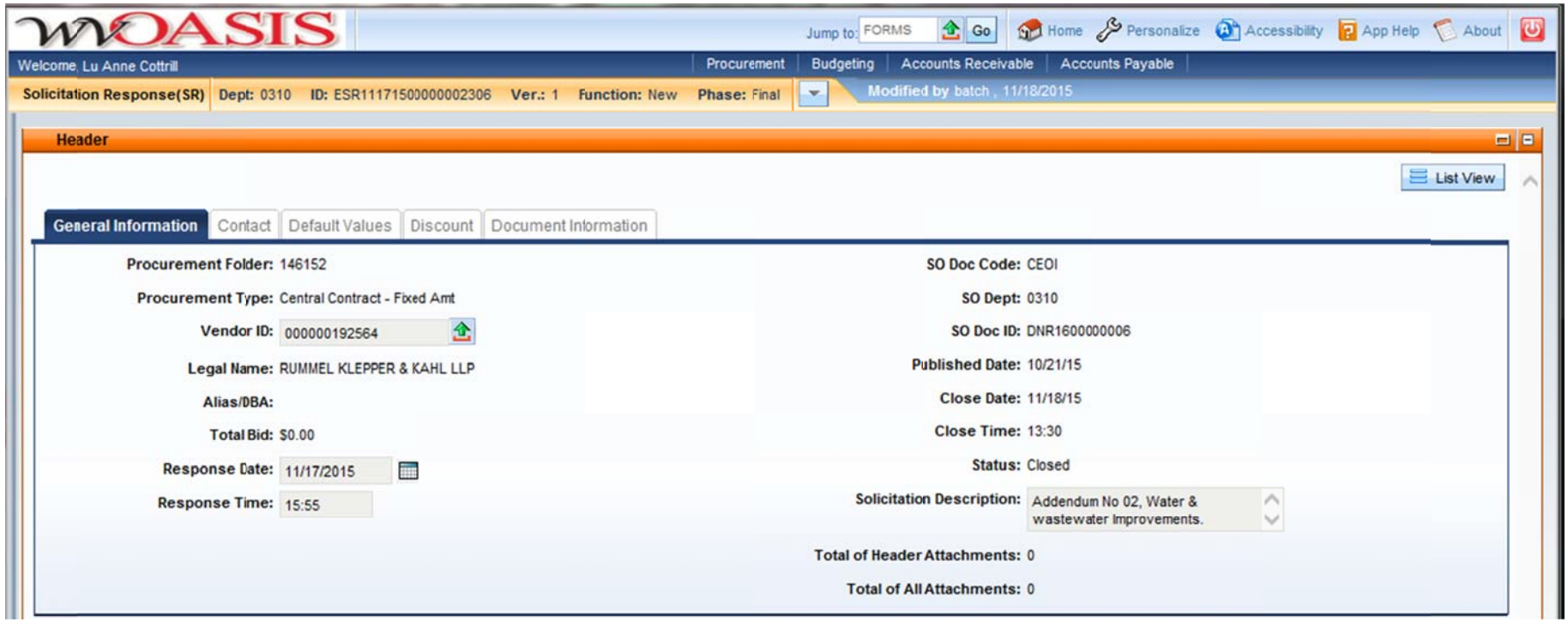
The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.


WVOASIS
Jump to: FORMS Go
Home
Personalize
Accessibility
App Help
About
Welcome, Lu Anne Cottrill
Procurement
Budgeting
Accounts Receivable
Accounts Payable
Solicitation Response(SR)
Dept: 0310
ID: ESR11171500000002306
Ver.: 1
Function: New
Phase: Final
Modified by batch , 11/18/2015
Header
List View
General Information
Contact
Default Values
Discount
Document Information
Procurement Folder: 146152
Procurement Type: Central Contract - Fixed Amt
Vendor ID: 000000192564
Legal Name: RUMMEL KLEPPER & KAHL LLP
Alias/DBA:
Total Bid: $0.00
Response Date: 11/17/2015
Response Time: 15:55
SO Doc Code: CEOI
SO Dept: 0310
SO Doc ID: DNR1600000006
Published Date: 10/21/15
Close Date: 11/18/15
Close Time: 13:30
Status: Closed
Solicitation Description: Addendum No 02, Water & wastewater Improvements.
Total of Header Attachments: 0
Total of All Attachments: 0

Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder : 146152

Solicitation Description : Addendum No 02, Water & wastewater Improvements.

Proc Type : Central Contract - Fixed Amt

Date issued	Solicitation Closes	Solicitation No	Version
	2015-11-18 13:30:00	SR 0310 ESR11171500000002306	1

VENDOR

000000192564

RUMMEL KLEPPER & KAHL LLP

FOR INFORMATION CONTACT THE BUYER

Guy Nisbet

(304) 558-2596
guy.l.nisbet@wv.gov

Signature X **FEIN #** **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Architectural engineering				

Comm Code	Manufacturer	Specification	Model #
81101508			

Extended Description : AE Services for Babcock wastewater treatment plant replacement and Droop Mountain water supply improvements.

November 18, 2015

DNR

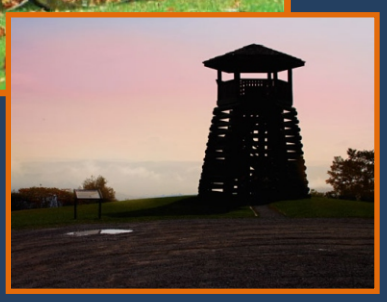
DIVISION OF NATURAL RESOURCES
PARKS & RECREATION DIVISION

Expression of Interest

Babcock State Park
Wastewater Treatment Plant Replacement

&

Droop Mountain Battlefield
State Park
Water Supply Improvements



RK&K ENGINEERS

Responsive People • Creative Solutions

RK&K ENGINEERS
159 Plaza Drive | Keyser, WV 26726 | P 304.788.3370 | F 304.788.3577 | www.rkk.com

November 18, 2015

Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

Reference: **Expression of Interest**
Babcock and Droop Mountain State Parks
Wastewater and Water Supply Improvements

Gentlemen:

Rummel, Klepper and Kahl, LLP (RK&K) is pleased to submit this Expression of Interest in response to the Department of Administration Purchasing Division's request for AE services for Babcock and Droop Mountain State Parks Wastewater and Water Supply Improvements.

RK&K is a 1,038-person, multidisciplinary, consulting engineering firm which has been successfully providing services to clients since 1923. RK&K's expertise includes water, sanitary, civil, environmental, utilities, transportation, structural, geotechnical, mechanical/electrical, and construction engineering management and inspection. Ranked #73 on the 2015 Engineering News Record's listing of Top 500 Design Firms, RK&K serves an array of Federal, State, and local clients from 19 offices throughout the mid-Atlantic and Southeastern states. RK&K has offices in West Virginia, Maryland, Virginia, North Carolina, Pennsylvania, Delaware, Florida, District of Columbia and Texas. The firm employs a diverse staff of engineers, planners, environmental specialists, surveyors, designers, draftsmen/CADD technicians, construction managers, inspectors, and support staff. RK&K's services include but are not limited to feasibility studies, project planning, preliminary engineering, final design, and construction inspection/management.

If chosen for this work, the projects will be overseen by Mr. **David G. Vanscoy, PE, PS** from RK&K's Keyser, WV office. As RK&K's Director of Municipal and Transportation Engineering in West Virginia, Mr. Vanscoy has over 43 years of experience which includes all aspects of water and sewer system projects.

Mr. **John W. Cole, PE** will assist Mr. Vanscoy as project manager. Mr. Cole has over 14 years of experience with water and sewer system projects very similar in the scope of work needed for these projects. A registered professional engineer in West Virginia and Maryland, John will work closely with key team members and representatives of the WV Division of Natural Resources.

Mr. **Michael W. Myers, PE**, partner-in-charge, has assured that all appropriate resources will be made available to the project team for the timely completion of the projects while maintaining quality control as a top priority. The focus of the RK&K Team will be project success with on-time, on-budget delivery of services.

RK&K sincerely appreciates this opportunity to demonstrate our outstanding technical capabilities, team innovativeness, and unparalleled project commitment that have built success on other water and sewer projects. The RK&K Team looks forward to working with the WV Division of Natural Resources on these important projects.

Very truly yours,

RUMMEL, KLEPPER & KAHL, LLP

David G. Vanscoy, PE
Director, Municipal and Transportation Engineering

DGV:rlc

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.:

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:
(Check the box next to each addendum received)

[X]	Addendum No. 1	[ ]	Addendum No. 6
[X]	Addendum No. 2	[ ]	Addendum No. 7
[ ]	Addendum No. 3	[ ]	Addendum No. 8
[ ]	Addendum No. 4	[ ]	Addendum No. 9
[ ]	Addendum No. 5	[ ]	Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Rummel, Klepper & Kahl, LLP
Company

Authorized Signature

November 18, 2015
Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

MANDATE: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: RK&K

Authorized Signature: Michael W. Myers, P.E. Date: November 2, 2015

State of Maryland

County of Anne Arundel, to-wit:

Taken, subscribed, and sworn to before me this 2nd day of November, 20 15.

My Commission expires April 7, 2015, 20___.

AFFIX SEAL HERE

VIRGINIA A. HAGE NOTARY PUBLIC ANNE ARUNDEL COUNTY, MD

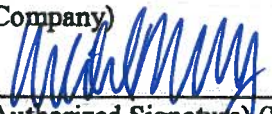
NOTARY PUBLIC Virginia A. Hage

CERTIFICATIONAND SIGNATURE PAGE

By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

RK&K

(Company)



Michael W. Myers, P.E., Partner

(Authorized Signature) (Representative Name, Title)

410-728-2900 410-728-2992 November 2, 2015

(Phone Number) (Fax Number) (Date)

West Virginia
Division of Natural Resources
Park and Recreation Division

Babcock State Park
Wastewater Treatment Plant Replacement

Droop Mountain Battlefield State Park
Water Supply Improvements

SECTION 1

Qualifications and Resources

RK&K ENGINEERS Responsive People • Creative Solutions

INTRODUCTION

In this section RK&K will present outstanding qualifications and resources relating to the needs of West Virginia Division of Natural Resources Babcock and Droop Mountain State Parks Wastewater and Water Supply Improvements Project.

QUALIFICATIONS

RK&K is a full-service firm providing creative solutions to clients for the past 92 years. As one of the most respected engineering firms in the region, RK&K has received numerous awards and recognition from clients and professional organizations for work performed on many diverse projects. Our biggest differentiator is our people. The RK&K Team is known for its technical know-how, over-the-top personal service, and - most importantly - successfully achieving our clients' goals.

RK&K's technical expertise places us 73rd on the Engineering News Record's 2015 listing of the Top 500 Design Firms. Our award-winning and diversified staff is experienced in an array of engineering disciplines, including planning; engineering design; and construction management, inspection and engineering for transportation, environmental, infrastructure, utility, site and surveying and energy/pipeline projects. Yet, every one of our 1,000+ team members understands what it takes to deliver success to our clients. Additionally, the firm employs experienced staff with the following professional registrations:

- American Institute of Certified Planner
- Certified Construction Manager
- Certified Environmental Inspector\Certified Floodplain Manager
- Certified Public Accountant
- Certified Building Commissioning Professional
- Design Build Institute of America
- Leed Accredited Professional
- Certified Pipeline Assessor (PACP)
- 40-Hour OSHA HAZWOPER
- Manhole Assessment and Certification Program
- NACE Certified Corrosion, Cathodic Protection & Coatings Specialist
- Professional Geologist
- Professional Wetland Scientist
- Professional Traffic Operations Engineer
- Professional Land Surveyor/Property Surveyor
- Registered Landscape Architect
- Qualified Professional (Forest Delineation)
- Construction Inspection Certifications including NICET, 10-Hour OSHA, among others

With more than 90 years of engineering experience, 69 of which involves water/sanitary and environmental engineering, RK&K has developed expertise in providing study, design, construction and project delivery for all aspects of water, wastewater and stormwater utility systems. This industry expertise makes RK&K a reliable partner to fulfill the requirements of these projects for the WV Division of Natural Resources.

RK&K's in-house services encompass planning, preliminary engineering and studies for evaluation of alternate designs, final design, development of contract documents for new construction, rehabilitation, replacement and construction inspection/administration services. RK&K's professional services include:

- **Sanitary Engineering:** water and sewer systems and facilities, industrial and solid waste disposal, water supply facilities, pollution control, and environmental evaluation

- **Utility Alignment, Rehabilitation, and Relocation:** sewer lines, water mains, storm drains, gas mains, fuel lines, electrical ducts and communication ducts
- **Stormwater Management and Stream Hydraulics:** drainage structures, sediment & erosion control, hydrology/hydraulics, scour analysis, stream and floodplain studies, stormwater management facility design
- **Permit Application and Acquisition:** CERCLA, RCRA, NPDES, NEPA EA/EIS, wetlands, natural resources, floodplains, construction, erosion control
- **Environmental Engineering:** facility and site assessments; hazardous and toxic waste site characterization and remediation; spill plan development, spill containment system design; underground/aboveground storage tank system testing, design, installation and closure; and hazardous material handling
- **Natural Environment:** wetland delineations / mitigations; stream classifications / stabilizations; forest stand delineations; natural resource inventories; rare, threatened and endangered species surveys and biological assessments; and completing supporting environmental technical reports, documentation and regulatory agency coordination
- **Natural Gas, Petroleum and Pipeline Engineering:** natural gas distribution systems and transmission pipelines; pressure regulation and measurement facilities; petroleum pipelines, storage, distribution and related facilities; and storage and training facilities
- **Site Development:** educational, medical, commercial, industrial, recreational/sports, military and waterfront facilities
- **Construction Management and Inspection:** bridges, highways, buildings, transit systems, utilities and public works facilities; CPM scheduling; claims; materials testing
- **Transportation Engineering:** highways, interstates, freeways, roadways and streets, interchanges, toll facilities, collector-distributor roads, roundabouts, railroads and mass transit, airport facilities
- **Traffic Engineering:** traffic forecasting and analysis; highway signing, pavement marking and lighting; traffic signal design; traffic control; maintenance of traffic during construction; traffic impact studies; high accident location studies; travel time/delay studies; warrant, capacity, intersection/ interchange, arterial, queuing and roundabout analyses; and trip generation/distribution
- **Structural Engineering:** new bridges, bridge replacements, bridge rehabilitation, and related transportation structures, tunnels, site-specific utility structures, culverts, retaining walls, noise barriers, foundations, piers, bulkheads, relieving platforms and jetties, structural inspection, condition evaluation and ratings
- **Geotechnical Engineering/Geology:** retaining walls, foundations, dams/impoundments, groundwater supply/management/quality investigations, slope stability, dredged material management
- **Geographic Information Systems (GIS):** GIS needs analysis, master plans, design/development and deployment, relational database administration (RDBMS), data automation and conversion services, field collection and data verification (conventional and GPS), custom GIS programming and integration services, document scanning, catalog and on-line image archive development.

CAPACITY OF THE FIRM

Rummel, Klepper & Kahl, LLP (RK&K) is a 1,038-person multidisciplinary consulting engineering firm providing services throughout the Mid-Atlantic and Southeastern states. Since our founding in 1923, the RK&K team has satisfied both public and private sector clients by providing multi-discipline planning, engineering, environmental, and construction phase services. We offer innovative and efficient solutions on a variety of projects nationwide from 19 offices in eight states and Washington, DC. We collaborate with clients and teaming partners, ensuring a commitment to quality in achieving their goals.

RK&K is managed by five equal partners within a limited liability partnership; current partners include:

- **Michael W. Myers, PE**
- **J. Michael Potter, PE, CCM**
- **Thomas E. Mohler, PE**
- **Mark M. Dumler, Esq. CPA**
- **Carolann D. Wicks, PE**

Working closely with these partners are Partner Emeritus David W. Wallace, PE, Senior Directors and Directors - key leaders who manage and coordinate projects and staff, serve as liaisons with clients and subconsultants, and enhance projects with their vital technical expertise. RK&K presently has 36 Senior Directors and Directors in nine of our offices.

RK&K's services are provided from numerous locations throughout the Mid-Atlantic, Southeast and Texas, including:

- **Keyser, West Virginia**
- **Baltimore, Maryland (2 Locations)**
- **Washington, DC**
- **Wilmington, Delaware**
- **Fairfax, Richmond, Virginia Beach, Newport News, Virginia**
- **King of Prussia, York, Allentown, Pennsylvania**
- **Raleigh, Charlotte, Greensboro, North Carolina**
- **Lakeland, Orlando, Tampa, Florida**
- **Houston, Texas**

If chosen for these projects, work will be done from RK&K's Keyser, WV office. The Keyser office houses a well-diversified staff of 28 engineers, planners, surveyors, designers, draftsmen/CAD technicians, construction managers, inspectors, and support staff. Keyser's office staff works seamlessly with our headquarters' staff in Baltimore, Maryland, as well as the other RK&K offices throughout the Mid-Atlantic, Florida and Texas. David G. Vanscoy, PE, Director Municipal and Transportation Engineering and John W. Cole, PE, Project Manager have the ability to reach throughout the firm to provide additional support if the need arises. Overall, RK&K includes over 245 professional engineers registered in 26 states. RK&K's project team will be supported from a multi-disciplined staff qualified in the disciplines noted below:

- Civil Engineers
- Sanitary/Environmental Engineers
- Utility Engineers
- Structural Engineers

- Construction Inspectors
- Construction Managers
- Draftspersons/CADD
- Mechanical Engineers
- Electrical Engineers
- Geologists
- Soils Engineers
- Surveyors
- Archeologists
- Planners
- Environmental Scientists
- Hydraulic Water Resources Engineers
- Environmental Designer/Technicians
- Traffic Engineers
- Landscape Architects
- Transportation Engineers/Designers
- Technical/Administrative Support
- Computer Programmers/Technicians
- Graphics Specialists
- GIS Specialists
- Contract Administrator

QUALITY ASSURANCE/QUALITY CONTROL

A key aspect to delivering a satisfactory project, complete, on schedule, and within budget is the utilization of a QA/QC program. Quality Control for each assignment will be performed by every employee working on this project through the rigorous application of appropriate criteria and sound engineering practice. Team members will utilize RK&K's established QA/QC program. The three tenets of RK&K's QA/QC Program are:

PROJECT MANAGEMENT CONTROL

Coordinating and interfacing with team members will assure proper direction and flow of information. The successful implementation of such a course of action will require daily contact between the Project Manager and key staff members. RK&K also will implement an established in-house Staff Operating Plan (SOP) which has proven successful in the past. RK&K's SOP consists of the following:

- Periodic RK&K management meetings conducted by the Project Manager with other key RK&K staff. The purpose of these meetings will be to review progress, costs and schedules; set priorities; assign staff; identify and discuss problems and develop solutions or approaches to the solutions to these problems.
- An action item list will be developed at the first meeting and updated at each subsequent meeting. The list will consist of an item, the date of its identification, the person who must perform the action to resolve or address the item, and deadline dates for resolution. The updated action item list will be distributed by the Project Manager to key staff. Each person participating in the meetings will provide a status report.

QUALITY OF WORK

RK&K recognizes the importance of developing the highest quality studies, designs and contract documents. RK&K has developed a QA/QC Manual to fulfill this commitment. This manual is distributed to every employee at RK&K and is reviewed periodically enabling RK&K to continuously update/improve our QA/QC Program.

To provide well-conceived approaches and technically accurate submissions, prepared on schedule and within established budgets, RK&K employs a Total Quality Management (TQM) approach. Implementation of this approach is embodied in seven components. These components include:

- Initial development of investigative approaches and concepts by a select team composed of the Project Manager and key staff, with proven capabilities in the required project disciplines.
- Development of an in-house work plan by the Project Manager, which establishes a well-defined work flow process. The plan will address:
  - Standards to be applied
  - Permits required
  - Critical or potential problem areas
  - Identification of long lead items
  - Coordination with other RK&K departments
  - Man-hours and budgets
  - Schedule
- Conducting an in-house project initiation conference with relevant departmental and inter-departmental staff. The importance of communication among all project team members and the necessity of meeting the requirements of "internal" and "external" clients are stressed.
- The QA/QC Review Committee, comprised of senior technical personnel who are not involved in the day-to-day project efforts, will be convened at the initiation of the project and will continue to meet through the report and contract document preparation phases.
- The Project Manager will have direct project involvement and will monitor conformance to the requirements established by the work plan. Project monitoring will include adherence to continuous checking procedures, documentation requirements, and progress reporting as well as overall quality control.
- Final quality control checks by the Project Manager, Task Managers and QA/QC Review Committee will be provided prior to each submission.
- Prior to plan submission, RK&K's construction management professionals will conduct a constructability review, if applicable; to identify potential problems that could lead to construction-related difficulties and associated remedies.

COST CONTROL

RK&K maintains a cost accounting system (MIS system) that is capable of segregating and identifying accumulating costs for each task performed under Cost-Type projects. The Project Manager will carefully monitor budgets on a weekly basis. RK&K's MIS system allows managerial staff to monitor progress versus budget, which aids in the identification of potential problem areas and allows the implementation of appropriate remedial actions early enough in the project to ensure that tasks are completed within budget. RK&K's automated MIS system provides our project management team with a report that includes a breakdown of man-hours and payroll by individual tasks for "budget", "actual payroll used", "available to complete", and the budgeted and actual hourly payroll rates. This system also provides a list of employees who worked on each project task and the hours each

employee charged during the weekly report period. This report, which is available within three days after the end of the weekly report period, permits managers to monitor a project's status quickly and efficiently from the manager's own workstation.

KEY TEAM LEADERS ARE PROFESSIONAL ENGINEERS LICENSED IN THE STATE OF WEST VIRGINIA

Work on this project will be managed from RK&K's Keyser, WV branch office by professional engineers licensed by the State of West Virginia. The Keyser office includes a staff of 29 engineers, technicians, inspectors and surveyors, all of whom are available for work on this project and are highly qualified and experienced in their respective fields. The Keyser office is managed by David G. Vanscoy, PE, a licensed engineer and surveyor in the State of West Virginia with over 43 years of experience.

WEST VIRGINIA BOARD OF PROFESSIONAL ENGINEERS CERTIFICATE OF AUTHORIZATION

RK&K is certified by the West Virginia Board of Professional Engineers. A copy of RK&K's Certificate of Authorization from the West Virginia Board of Professional Engineers is included on page 1-16.

WEST VIRGINIA BOARD OF PROFESSIONAL SURVEYORS CERTIFICATE OF AUTHORIZATION

RK&K is certified by the West Virginia Board of Professional Surveyors. A copy of RK&K's Certificate of Authorization from WV Board of Professional Surveyors is included on Page 1-17.

TECHNICAL QUALIFICATIONS

RK&K has achieved great success in water, sanitary/wastewater, and environmental engineering since entering the field in 1946. During this time, RK&K has completed numerous projects to total client satisfaction. RK&K's engineering experience covers the full spectrum of services, including evaluation, planning, design, and construction management as documented over the past five decades with numerous projects having been placed into successful operation. The projects included new construction, rehabilitation, upgrading and expansion of system infrastructure. RK&K has also been involved in numerous studies to evaluate the adequacy and condition of existing facilities and to develop and evaluate alternatives for new facilities best meeting the current and future needs of our clients. RK&K is vendor-independent, we will evaluate options based on the client's specific needs to ensure the best system is selected.

The following paragraphs will further demonstrate RK&K's water and wastewater experience:

WATER SYSTEMS

- **Water System Studies**

  RK&K has provided strategic planning services to a number of clients to assist them in providing services to their customers. The scope of these services has literally ranged from "source to tap" and has included evaluation of raw water supplies, evaluation of raw water intake and pumping facilities, evaluation of treatment processes, evaluation of finished water pumping alternatives, and evaluation of distribution system and storage requirements. These studies often have evaluated the condition and adequacy of existing facilities to meet clients' needs, both in the short term and the long term. RK&K uses the software package CYBERNET (a.k.a. WATERCAD) by Haestad Methods to perform computer simulations and hydraulic modeling of water systems for both normal usage and fire demand

conditions. Pilot testing and computer modeling have been used in a number of projects to best evaluate a variety of conditions. Additional services provided have included treatment system troubleshooting, water chemistry analysis and operator training.

- **Water Pumping Facilities**

  RK&K's experience in water pumping facility design has included horizontal split-case pumping facilities of single- and double-stage design with side and bottom suction configuration ranging up to 100-mgd in capacity, vertical turbine pumping facilities with both deep- and short-column settings, enclosed tube and open-shaft design, above- and below-floor discharge, and multiple stages ranging up to nearly 50-mgd in capacity; vertical turbine booster pumps in enclosed "can" configurations with an aggregate station capacity of up to approximately 5-mgd; and submersible well pumps in various configurations. These facilities have been designed for constant speed units of varying stepped capacities and for variable speed units of identical size. Controls have included local manual on/off, telemetered remote manual on/off, and automatic on/off in response to ambient system pressures and/or elevated tank levels, with emergency p ump-off override controls in response to low suction pressure, high discharge pressure, high bearing temperature or vibration level, motor over current, and other salient parameters. Water hammer transients have been managed and attenuated through delayed opening/closure, cone or pump check valves, surge tanks, pressure relief valves, or combinations of these devices.

- **Water Treatment Plants**

  RK&K's experience in water treatment plant experience has included the evaluation and design of new facilities as well as the rehabilitation, upgrade and expansion of existing treatment facilities ranging in size from small package plants to the 318-mgd Montebello Filtration Plant in Baltimore, Maryland. We have provided planning, regulatory analyses, vulnerability analysis, water quality analysis, design services, bid document preparation, cost estimating, permitting and funding assistance, troubleshooting, and/or operational assistance for numerous types of water treatment processes including:

  - Disinfection systems including chlorine, chloramines, on-site hypochlorite generation, ozonation, U.V. disinfection, and contact basins
  - Coagulation/Flocculation/Sedimentation (including "high-rate" processes such as plate settlers and solids contact units)
  - Dissolved air flotation
  - Filtration systems including mono media, dual media, and multi-media filters and including buildings, structures, media, backwash systems, filter controls, piping, valving and miscellaneous appurtenances
  - Ozone/Biofiltration including ozone contactors, generation equipment and destruction equipment
  - Activated carbon for taste and odor control
  - pH adjustment and corrosion control technologies
  - Chemical feed systems (primary coagulants, polymers, oxidants, fluoride)

- Residuals processing and disposal
- Laboratory facilities
- Storage, pumping, and conveyance systems
- Miscellaneous electrical, SCADA and HVAC systems

- **Water Transmission Mains**

  RK&K's specialized experience in water distribution and transmission spans over a half-century during which time numerous projects have been planned, designed, and placed into successful operation. RK&K's specific experience relative to the study and design water transmission mains include:

  - Provision of varied pipeline alignment studies and designs for small (<30" diameter) and large (>30"diameter) water transmission mains; complete municipal distribution systems (4-12" diameter); discrete high-pressure fire-fighting loops; and utility relocations performed in conjunction with major highway, rail, pier facility, and urban renewal projects.
  - Study and/or design of water mains ranging to 108 inches, working pressures in the range of 50 to 250 psi, and lengths from 1,000 to 50,000 linear feet.
  - Use of such construction materials as prestressed concrete cylinder pipe (PCCP), steel pipe, ductile iron pipe (DIP), reinforced concrete pipe (RCP), polyvinyl chloride (PVC) pipe and high-density polyethylene (HDPE) pipe.
  - Familiarity with various pipeline environments including conventional trenches with pile, bent, cradle, or indigenous material foundations; subaqueous crossings; bridge suspensions; tunnels; construction within agency and railroad rights-of-way; and construction in contaminated areas.
  - Familiarity with design of new and/or relocated water mains through both newly-developed and redeveloped areas in the mid-Atlantic region.
  - Experienced in the application of hydraulic network analysis computer modeling including KYPIPE and CYBERNET. Ability to analyze and model dynamic mode and extended period simulation water distribution system hydraulics.
  - Experienced in the design of pipe thrust restraint methods including pipe restrained joint systems, concrete buttress and blocking and combinations of these methods. Familiarity with issues of water main service continuity and problems with pressure pipe harnessing/buttresses in areas of proximate active excavation.
  - Use of corrosion control methods for water mains, force mains, and gas mains including adjustable impressed current and passive sacrificial anode cathodic protection systems as well as polyethylene wrap protection and multi-layered pipeline coating system.
  - Successful performance of public relations and community outreach programs. Experience with construction phase engineering and resident inspection services during construction of water mains ranging up to 96-inches in diameter.

- **Water Storage Facilities**

  RK&K's specialized experience with water storage facilities includes the design of elevated steel and ground-level storage facilities, the design of prestressed-precast concrete storage facilities, the rehabilitation design of reinforced concrete storage facilities, and the design of foundations required to support these facilities. The sizes have ranged from 0.1- to 29.0 MG. A number of these storage facilities have required that specific consideration be given to siting aesthetics because of their proximity to residential areas and special construction measures due to archeological and historical concerns. Capacities of many of these facilities have been confirmed by computer modeling. RK&K has participated in several public relations/participation programs and assisted the client in public presentations by preparing informative and innovative visual aids.

- **Water System Operation and Maintenance Start Up Services**

  RK&K's experience with operation and maintenance associated with water, wastewater and stormwater facilities includes a wide range of capabilities and services. These consist of training of client staff and operators; preparation of detailed O&M manuals and standard operating procedures; plant evaluation, performance testing, and troubleshooting; and facility startup. RK&K is an innovator in the design and delivery of customized training programs for O&M personnel. Training programs are often developed to address client-specific concerns for facilities already in operation. RK&K has developed comprehensive SOPs, standard maintenance procedures, operator pocket guides, emergency response plans, operating placards, and other information for plant personnel. In addition, RK&K provides recommendations resulting in improved plant performance, energy and chemical system optimization, structural integrity and design life, and equipment operation and reliability. Regarding inventory management and control for municipal water, wastewater and stormwater facilities, RK&K often institutes as part of the O&M manual or standard operating procedures, a facility-specific protocol for managing spare parts inventories, lubricants, and equipment-specific tools. These protocols are usually developed in conjunction with the client's operation and maintenance staff and can range from a three-ring binder containing the inventory listing, parts, identification numbers, and vendor codes to a complete computer database installed on a networked hardware system with terminals accessible at various system facilities.

WASTEWATER SYSTEMS

- **Wastewater System Study**

  RK&K can attest to an 92-year record of achievement in the field of civil/sanitary engineering, during which time planning, study and design services have been provided for numerous wastewater conveyance systems including over 200 interceptor sewers, conventional gravity and low pressure sewers, parallel relief sewers, and force mains. These projects have involved pipelines ranging from 8- to 108-inches in diameter constructed of ductile iron pipe (DIP), prestressed concrete cylinder pipe (PCCP), reinforced concrete pipe (RCP), polyvinyl chloride (PVC), high density polyethylene (HDPE), centrifugally-cast fiberglass mortar, clay, steel and cast-in-place conduits to 22-feet in diameter. Pipeline installation conditions have varied from conventional trenches with pile bent, cradle, or indigenous material foundations

to subaqueous crossings including horizontal directional drills, to bridge suspensions, to tunnels. Boring and jacking of the roadway and railroad at pipe crossings is frequently an aspect of our work. For corrosion control, adjustable impressed current and passive sacrificial anode cathodic protection systems as well as polyethylene wrap protection have been designed for ferrous pipelines and PCCP systems when required. For reinforced concrete conduits, both plastic liner and special construction materials with sacrificial barrel design have been provided where a corrosive hydrogen sulfide environment was anticipated. For relief or parallel sewers, hydraulic interconnection and balancing structures have been designed between the existing and relief sewers.

RK&K has been involved in a number of projects requiring special investigations and rehabilitative design where existing interceptors and force mains either have structural damage that compromises the integrity of the sewer system, or have conditions that limit the necessary flow through the pipe. This type of work has also included analyses of rehabilitative alternatives and preparation of rehabilitative plans and specifications. These analyses usually include a comparative evaluation of in-situ repair methods versus a more traditional approach of excavation and pipe replacement. Excavation and pipe replacement often have higher costs and may present construction and safety challenges as compared with in-situ methods. In-situ methods such as sliplining with HDPE pipe, inflating a resin-impregnated felt and polyethylene tube within the sewer to create a permanent liner, and chemical grouting are effective methods to improve the structural condition and carrying capacity of a pipeline. The majority of this work has involved design to maintain services while the pipeline was being repaired. RK&K has also been involved in emergency design for projects where changed field conditions or erroneous record documents have required modifications to contract documents.

- **Wastewater Pumping Stations**

RK&K's specialized experience in wastewater pumping station study and design has involved both new and upgraded existing pumping stations. Among the numerous wastewater pumping stations planned and designed by RK&K are examples of high-, medium-, and low-head facilities employing horizontal and both close-coupled and extended-shaft vertical pump configurations as well as submersible and dry-pit submersible pumping units. Auxiliaries have included comminution, mechanical screening, grit collection and washing; oil accumulators and hydropneumatic systems; compressed air, chlorine, hydrogen peroxide, and ferrous sulfate feed for hydrogen sulfide control; activated carbon and ozone wetwell air quality control; soil odor filters; packed tower chemical scrubbers; heating, ventilation, and dehumidification systems; emergency standby generators; and dual power supply systems.

  - Modifications of pump motor speed, horsepower, and impeller size to achieve increased capacity and head
  - Interception of wet weather flows and associated abrasive grit
  - Sequences of construction and operation to maintain existing wastewater pumping capacity during construction, testing and station piping change-over
  - Modifications of pump materials, motors, instrumentation and other appurtenances.

- **Wastewater Treatment**

  RK&K has completed more than 100 wastewater treatment assignments, including the design of 40 new treatment and pre-treatment systems, including aerated lagoons, and 60 rehabilitation, expansion, upgrading, and process-modification systems. System and process capacities have ranged from 0.02 to 180 mgd and have been designed for a broad spectrum of sanitary and combined sanitary and industrial waste loads. Additionally, RK&K has successfully completed more than 30 significant industrial wastewater treatment assignments in the Mid-Atlantic and southeastern regions during that same period.

- **Wastewater Collection and Conveyance**

  RK&K has provided planning, study and design services for numerous wastewater conveyance systems including over 400 interceptor sewers, conventional gravity and low-pressure sewers, parallel relief sewers, and force mains. These projects have involved pipelines ranging from 6 to 108 inches in diameter. Pipeline installation conditions have varied from conventional trenches with pile, bent, cradle, or indigenous material foundations to subaqueous crossings including horizontal directional drills, to bridge suspensions, to tunnels. Boring and jacking of the roadway and railroad at pipe crossings is frequently an aspect of our work.

- **Force Main/Interceptor Rehabilitation or Replacement**

  RK&K has been involved in a number of projects requiring special investigations and rehabilitative design where existing interceptors and force mains either have structural damage that compromises the integrity of the sewer system or have conditions that limit the necessary flow through the pipe. Investigative efforts have involved sewer system evaluation study (SSES) tasks such as televising the interior of pipelines, obtaining and inspecting core samples of pipe walls, smoke and dye testing to identify in-flow sources, inspecting for pipe wall failure or deformations, pipe movement, joint separation, corrosion, erosion, scouring and tuberculation. This type of work has also included analyses of rehabilitative alternatives and preparation of rehabilitative plans and specifications.

- **Hydraulic Modeling**

  In evaluating an existing system, identifying problem areas, assessing the merits of recommended improvements or planning a proposed system, sewage force main systems and sanitary and combined sewer systems with computers is a proven, effective, and reliable technology for simulating and analyzing system behavior under a wide range of hydraulic conditions. RK&K uses various modeling software, depending upon the needs of the utility. We have provided modeling support for many Maryland counties and municipalities in neighboring states, as well as private utilities and institutions, including: Baltimore City; Baltimore County; Catonsville Community College; The Johns Hopkins University; WSSC; Frederick County; Harford County; Talbot County; City of Wilmington, Delaware; York Water Company, Pennsylvania; Easton Suburban Water Authority, Pennsylvania; Virginia Beach, Virginia; and numerous small utilities in West Virginia, including Central Hampshire PSD and the City of Romney. The bulk of our experience is with WaterCAD by Haestad Methods for water distribution and force main systems and XP-SWMM2000 by XP Software for combined and sanitary collection systems.

GENERAL SERVICES WATER AND SEWER

- **Environmental Assessments**

  The RK&K Team includes individuals experienced in identifying jurisdictional waters of the U.S., including the vegetation, soils, and hydrology for wetland delineations. Several of our key and support staff are U.S. Army Corps of Engineers' (COE) certified wetland delineators and/or professional wetland scientists. RK&K has the ability to assess functions and values of affected wetlands using techniques such as the Hollands Magee method, Soil Conservation Service Method, Hydrogeomorphic Classification method (HGM) Rapid Assessment Procedure (Magee Hollands Method) or other accepted methods.

  RK&K has conducted several hundred wetland delineations and numerous functional assessments throughout the Mid Atlantic regions. Wetland delineations are performed in accordance with the 1987 COE Manual and have been approved by, and jurisdictional determinations have been obtained from, various COE districts, including Baltimore and Norfolk.

  RK&K includes professionals skilled in delineating and documenting stream conditions (physical and biological), submerged aquatic vegetation habitat, and water quality conditions. RK&K has experience using a variety of methodologies for characterizing stream conditions including Rosgen Stream Classification, U.S.D.A.'s Stream Visual Assessment Protocol and EPA's Rapid Bioassessment Protocols. In addition, a member of our team developed a stream classification methodology for use by the Chesapeake Bay Local Assistance Department to classify perennial versus intermittent streams.

  RK&K also has extensive experience in preparing ecological technical reports. These reports include biological assessments prepared in compliance with the Endangered Species Act. For the Woodrow Wilson Bridge Replacement project, we prepared biological assessments for the Hay's Spring Amphipod and assisted in field surveys for the Bald Eagle. Other technical reports routinely prepared include: environmental impact statements; environmental assessments; wetland delineations and idenfication reports; natural resource inventories; cultural resource inventories; Phase I & II hazardous material investigation; forest stand delineations' avoidance and minimization report; mitigation site selection report; hydrologic and hydraulic studies; and geotechnical investigations.

- **Structural Engineering**

  RK&K's structural engineering resources offer experienced engineers capable of providing the services required for this project. RK&K's structural engineering staff is well qualified in performing all phases of work, commencing with concept and feasibility studie s through final design and construction phase services. With an extensive background in municipal and transportation facility projects, examples of structural services which have been performed by RK&K engineers include well houses, treatment plants, pumping stations, storage tanks, utility tunnels and vaults, retaining walls, vehicular tunnels, drainage structures, bridges, noise barriers, sign structures, maintenance shops, operations facilities, administration buildings, truck wash facilities, fuel handling facilities, chemical storage facilities and tourism welcome centers.

- **Mechanical Engineering**

  RK&K's mechanical design experience includes HVAC, dehumidification, piping, flow monitoring and valving systems for water and wastewater treatment plants and pumping stations; compressed air and odor control systems for treatment plants and pumping stations; and plumbing systems for various facilities. Automatic temperature and ventilation controls are designed in accordance with accepted code requirements for air change frequency, and to maintain the comfort of operations and maintenance personnel.

- **Electrical Engineering**

  RK&K has the in-house capabilities to design all types of electrical power distribution and control systems for municipal, industrial and transportation type construction contracts. We have provided complete design and construction phase services for various types of facilities throughout the mid-Atlantic region. These facilities include water and wastewater treatment plants, pumping stations, well houses, natural gas regulating stations, roadway lighting systems, mass transit facilities and several specialized military facilities.

  Designs have included low and medium voltage switchgear, complete power distribution systems, motor control centers, pump controls, HVAC controls, standby emergency power generator systems, SCADA systems and lighting systems of all types. RK&K utilizes the latest in computer aided design tools for power and lighting systems.

- **Geotechnical Services**

  RK&K has a fully equipped and staffed geotechnical laboratory which allows performance of a broad scope of soil and groundwater tests. The RK&K geotechnical engineering department has been involved in the field investigations, laboratory testing, analyses, and geotechnical report preparation for various municipal engineering facilities in excess of 30 years. Du ring this period, numerous treatment plants, pumping stations, solid waste disposal facilities, earth and rock fill dams, levees, floodwalls, lagoons, water supply wells and water supply reservoir projects have been investigated and final designs prepared. In addition, remedial measures and upgrades of existing facilities have been analyzed and geotechnical input provided for final design. For essentially all of these projects, test borings and observation wells have established soil, rock, and groundwater conditions at the site which, when used in conjunction with laboratory test results where required, has resulted in the most practical foundation system or rehabilitation measures for the project.

- **Instrumentation/Control and SCADA Systems**

  RK&K has extensive experience in the evaluation and design of instrumentation and control systems of all types. RK&K has designed numerous water and wastewater pumping facilities based on level control and pressure control for single and multi-pump applications ranging from a few horsepower to several hundred horsepower. Control systems utilized have included pre-engineered relay based systems, custom designed relay based systems, pre-engineered digital control systems, and custom designed systems using programmable logic controllers (PLCs). In each case, the control systems have been intergraded with the necessary alarm, telemetry and SCADA functions required for the application. Many of the systems designed have included the use of variable frequency drives to control pump speed, including customized multi step speed controls to limit piping fluid velocities under specific

operating conditions. In most cases, designs have included some level of back up control, ranging from redundant level/pressure sensing equipment, to full back up secondary controls providing automatic operating in the event of primary control failure. Other functions implemented in the design of pump control systems have been automatic valve timing/sequencing, seal water systems, automatic pump alternation, pump lockout circuitry, motor thermal monitoring and vibration monitoring. RK&K's involvement in the design of pumping control systems is often extended into the construction phase of a project, providing troubleshooting and start up services to aid in the implementation of designs.

- **Operation and Maintenance and Start-up Services**

  RK&K's experience with operation and maintenance associated with water, wastewater and stormwater facilities includes a wide range of capabilities and services. These consist of training of client staff and operators; preparation of detailed O&M manuals and standard operating procedures; plant evaluation, performance testing, and troubleshooting; and facility startup. RK&K is an innovator in the design and delivery of customized training programs for O&M personnel. Training programs are often developed to address client specific concerns for facilities already in operation. RK&K has developed comprehensive SOPs, standard maintenance procedures, operator pocket guides, emergency response plans, operating placards, and other information for plant personnel. In addition, RK&K provides recommendations resulting in improved plant performance, energy and chemical system optimization, structural integrity and design life, and equipment operation and reliability. Regarding inventory management and control for municipal water, wastewater and stormwater facilities, RK&K often institutes as part of the O&M manual or standard operating procedures, a facility specific protocol for managing spare parts inventories, lubricants, and equipment specific tools. These protocols are usually developed in conjunction with the client's operation and maintenance staff and can range from a three ring binder containing the inventory listing, parts, identification numbers, and vendor codes to a complete computer database installed on a networked hardware system with terminals accessible at various system facilities.

- **Construction Inspection / Management Experience**

  RK&K's construction department has been providing construction phase services for nearly 40 years involving hundreds of public works' projects with aggregate construction costs in the billions of dollars. Projects include roadways, bridges, transit tunnels, subways, hydroelectric plants, marine facilities, water and wastewater treatment plants, water and sewer infrastructure, pumping stations, stormwater management and flood control facilities plus a variety of building projects. Many of our projects involve a full range of construction management/administration and inspection services from design, preconstruction, construction and post-construction phase, including materials testing, tests and start-up, claims resolution, CPM scheduling, and contract close-out. RK&K's construction engineering and inspection services involve public works, capital improvements, transportation and/or development projects including: water and sewer infrastructure, pumping stations, intake lines, transmission mains, force mains, water/wastewater plant upgrades; and various building projects involving new structures, rehabilitation, mechanical/electrical modifications and upgrades, and other improvements.

  RK&K has over 167 construction engineering/inspection personnel of varying levels of

expertise. RK&K employees are knowledgeable about traditional as well as state-of-the art construction inspection practices and procedures, materials testing techniques, and are proficient in the use of computers. Many of the staff are NICET-certified, Troxler nuclear gauge trained, hold state erosion and sediment control certifications, are certified or approved by client's materials laboratories, and have solid backgrounds and expertise in field surveying and construction layout.

- **Cost Estimations**

  RK&K's cost control plan focuses on both our internal cost and assignment schedule and the construction cost of the facilities being designed. RK&K maintains a monthly routine of monitoring and updating project costs. RK&K's management information system provides timely reports so that project/task managers continuously monitor the budget standpoint on a real time basis.

  As a quality management technique, RK&K prepares construction cost estimates by hand in addition to using an automated cost estimating system. The owner is notified immediately when a condition/circumstance exists that affects the budget of the project. This approach has proven very effective with construction bids consistently within 5% of the cost estimate for contracts for $1,000,000 or less and within 3% for contracts greater than $5,000,000. Construction change orders have been consistently within 2% of construction cost.

SUMMARY

In the preceding paragraphs, RK&K's qualifications in aspects of water and wastewater design have been presented. In the remainder of this Expression of Interest, specific requirements of the Division of Natural Resources will be discussed, and how RK&K's expertise can best be utilized to provide the required engineering services for Babcock and Droop Mountain State Parks Wastewater and Water supply Improvements Project.

CERTIFICATE OF *Authorization*

STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS

The West Virginia State Board of Registration for Professional Engineers having verified the person in responsible charge is registered in West Virginia as a professional engineer for the noted firm, hereby certifies

RK&K ENGINEERS, LLP
C01505-00

Engineer in Responsible Charge: MICHAEL MYERS - WV PE 018055

has complied with section §30-13-17 of the West Virginia Code governing the issuance of a Certificate of Authorization. The Board hereby notifies you of its certification with issuance of this Certification of Authorization for the period of:

July 1, 2015 – December 31, 2015

providing for the practice of engineering services in the State of West Virginia.

IF YOU ARE REQUIRED TO REGISTER WITH THE SECRETARY OF STATE'S OFFICE, PLEASE SUBMIT THIS CERTIFICATE WITH YOUR APPLICATION.

IN TESTIMONY WHEREOF, THE WEST VIRGINIA STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS HAS ISSUED THIS COA UNDER ITS SEAL, AND SIGNED BY THE PRESIDENT OF SAID BOARD.

BOARD PRESIDENT

WEST VIRGINIA
BOARD OF PROFESSIONAL SURVEYORS

Certificate of Authorization

2015

ISSUED TO:

RUMMEL, KLEPPER & KAHL, LLP
Keyser, West Virginia

CERTIFICATE OF AUTHORIZATION No. 15-5554

This certificate is issued by the West Virginia Board of Professional Surveyors in accordance with *West Virginia Code § 30-13A-20*
The person or organization identified on this certificate is licensed to conduct professional surveying and mapping services in the State of West Virginia for the period

January 1, 2015 through December 31, 2015

This certificate is not transferrable and must be displayed at the office location for which issued.

In witness whereof I have put my hand, this 20th day of November, 2014

ROY E. SHREWSBURY, II, Chairman
NELSON B. DOUGLASS, Secretary
MARK H. HORNISH
R. MICHAEL SHEPP
ANTHONY J. SPARACINO

West Virginia
Division of Natural Resources
Park and Recreation Division

Babcock State Park
Wastewater Treatment Plant Replacement

Droop Mountain Battlefield State Park
Water Supply Improvements

SECTION 2

Staff Qualifications and Experience

RK&K ENGINEERS Responsive People • Creative Solutions

PROJECT TEAM

RK&K has carefully selected a project team consisting of personnel with extensive water and wastewater system evaluation and design experience for services required for Babcock and Droop Mountain State Parks Wastewater and Water Supply Improvements Project. These individuals were selected on the basis of their past experience with similar projects, familiarity with the project area, and availability to devote required time to work on the projects.

RK&K's Team is service-oriented and committed to responding to the DNR's project goals and needs. RK&K's Team will provide:

- **Immediate availability**
- **Exceptional relevant experience and knowledge**
- **Extensive relevant evaluation, design, permitting, bidding and construction phase capabilities**
- **Effective working relationships with regulatory and permitting agencies**
- **Proven stakeholder coordination expertise**
- **Efficient solutions**
- **Beneficial constructability reviews**
- **Well thought-out Maintenance of Operations Plans**
- **The ability to respond to the needs of the DNR's staff at a moment's notice**
- **A proven track record of exceptional service to prior clients.**

The vast experience of the RK&K Team will be an important asset to the Division of Natural Resources in addressing these projects located in Babcock and Droop Mountain State Parks

This project will be managed from RK&K's Keyser, WV office. John W. Cole, PE, Project Manager has the ability to reach throughout the firm to provide the most appropriate team members for any work required for these projects. RK&K works in a seamless environment allowing coordination with personnel located within all of RK&K offices.

At the heart of RK&K's success is the high value placed on teamwork and collaboration. Teamwork is important to RK&K's partners and senior leadership and is reflected in the operation of the firm, our projects, and our culture. RK&K functions seamlessly as a single unit, allowing our Keyser-based Team to utilize highly qualified experts throughout RK&K to provide superior expertise and timely service.

The RK&K Team has a wealth of experience and knowledge in their respective fields. The Team's expansive experience provides leadership, management, technical and engineering skills required for the comprehensive evaluation of project alternatives and successful implementation of selected options. The RK&K Team, as depicted in the following organization chart, was developed to best serve the Division of Natural Resources in meeting the goals established for these projects. Each Team member provides outstanding technical know-how, personal service, and most importantly, a commitment to achieving

goals. RK&K is focused on delivering the highest quality and most responsive service to the Division of Natural Resources. RK&K's success will be measured by the success of these important projects.

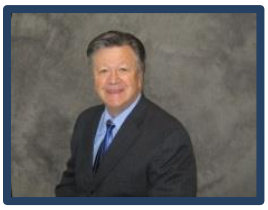
KEY TEAM MEMBERS

Key team members are professional engineers who have the proven ability to lead and undertake the responsibilities needed to achieve the project goals.

Michael W. Myers, PE, Partner, has more than 30 years of municipal engineering experience and will serve as Partner-in-Charge. A former officer in the US Army, Mr. Myers is responsible for RK&K's water, wastewater and stormwater practice firmwide. Since joining RK&K in 1990, Mr. Myers has served as a designer, project engineer, associate and partner and has been involved in many technically diverse planning, study and design projects. Mr. Myers will have overall responsibility for this contract and will ensure that adequate resources are made available to the Project Manager and Team. As the **Principal-in-Charge** of the projects, Mr. Myers, has ultimate responsibility for completion of the assigned work. His focus will be on technical direction, quality, budget and schedule. He will be responsible for ensuring adequate staff and other resources are available for the Team. Additionally, he will address contractual issues, such as negotiating the scope of work and price proposal associated with the task orders assigned.

Mr. **David G. Vanscoy, PE, PS,** as **QA/QC Manager** will supervise and oversee the administrative and technical aspects of the projects. Being born and educated in the State of West Virginia, Mr. Vanscoy has a very strong bond and sense of responsibility to the communities and State of West Virginia. His career started as a summer intern for the West Virginia Department of Highways in 1966. In 1987, Mr. Vanscoy started his own firm in Keyser, West Virginia, where he also served as the City Engineer on a consultant basis. In June 1999, Mr. Vanscoy joined RK&K as the regional manager in charge of our Keyser, WV office as associate. He now serves as Director of Municipal Engineering in West Virginia. Dave has over 43 years of engineering and project management experience including water system projects for large and small clients throughout the region. He will be routinely in contact with the District to avoid and resolve potential problems, ensuring the progress of the work, and verifying the client's needs are met.

Mr. **John W. Cole, PE** will serve as **Project Manager**. Mr. Cole has over 14 years of experience with water and sewer system projects very similar to what West Virginia DNR has advertised. Mr. Cole joined RK&K following graduation from Fairmont State College in 2001. Mr. Cole will be the day-to-day, primary point of contact with the Division of Natural Resources. A registered professional engineer in West Virginia and Maryland, John will work closely with key team members on the overall evaluation and design of the various project components to ensure that milestones are met. Mr. Cole's current on-call work with the City of Charles Town, Charles Town Utility Board is a good example of similar work. In addition to design and construction experience, Mr. Cole is experienced in all facets of engineering projects from conception to completion including but not limited to planning, permitting, and funding.



Larry W. McDowell, PE, PS will serve as **Construction Engineer**, responsible for construction management and inspection on the project. Mr. McDowell joined RK&K's Keyser, WV office in December of 1999 as Project Engineer. Mr. McDowell has over 43 years of diverse engineering experience associated with all aspects of the construction of water and sewer system projects. Since joining RK&K, Larry has managed the construction of many projects, most recently Frankfort Public Service District's Wiley Ford Water Project and Frankfort Public Service District's Regional Sewer Project.

RK&K has organized the project team in a manner to best address the types of tasks anticipated under this project, in quick response, with the ability to handle multiple, concurrent assignments of any variety or size. Resumes of each key staff member are provided on the following pages.

MICHAEL W. MYERS, PE

Partner

Assignment: **Partner-in-Charge**

Years of Experience: 30

Education: BS/Civil Engineering/1985
MA/Management/1989

Registration: PE/1992/Civil Engineering

Relevant Experience

Formerly a Captain with the U.S. Army's Environmental Hygiene Agency, Mr. Myers has extensive experience with public water and wastewater systems. Since joining RK&K in 1990, Mr. Myers has been involved in the management of many technically diverse water infrastructure planning, study, and design projects. Mr. Myers serves as RK&K's principal-in-charge of RK&K's water infrastructure throughout the mid-Atlantic region. He has successfully served BCPWSD on several important projects. Examples of his related experience includes:

Potomac River Intake and Pumping Station, Berkeley County, WV: Partner-in-Charge for design and construction engineering for a new submerged river intake and 6 MGD (expandable to 12 MGD) raw water pumping station. ACEC-award winning project involved significant permitting, design and construction challenges, including 60-foot excavation depth in a steep hillside, 40-foot fluctuation between normal river water level and 100-year flood elevation, portions of project located in two different states, and the need to keep existing facilities operational and in service while the new facilities were being constructed. Conducted feasibility studies to evaluate and select the optimum location for the new intake structure and pumping station. Tunneling and jacking was used for the installation of two 51-inch steel casing pipes, which house two 30-inch intake carrier pipes and intake screen cleaning air pipes. The intake structure was constructed using a cofferdam and temporary causeway. The new pumping station is equipped with two multi-stage vertical turbine pumps with a capacity of 3.0 MGD each.

Berkeley County Public Service Water District Water Audit, Berkeley County, WV: Provided quality control and technical oversite for a water system audit of BCPSWD's Northern Service Area. The purpose of the project was to identify sources of real and apparent water losses which were creating persistently high levels of non-revenue water in the Northern Service Area. The project ultimately lead to the reduction of non-revenue water to acceptable levels.

County-wide Radio Telemetry System, Berkeley County, West Virginia: Partner-in-Charge of the design and construction phase services of a countywide radio telemetry system for the Berkeley County water facilities, consisting of 12 water tanks, four pump stations, and three water treatment plants. Design included Control Microsystems SCADAPack RTUs, spread spectrum radios, and SCADA software.

Belair Road Transmission Main, Baltimore, MD: Project Manager for alignment study, design and construction for 9,500 LF of 24-inch water main located along Belair Road between Whitemarsh Boulevard and Ebenezer Road. The main has been designed for both DIP with sacrificial anodic cathodic protection system and PCCP bid alternatives and includes four interconnections with the existing distribution system. The project also includes the cleaning/relining of an existing 12-inch water main.

New Design Water Treatment Plant, Frederick, MD: Partner-in-Charge responsible for providing quality control and ensuring top performance of the RK&K Team for the planning, design, bidding, and construction phase services to upgrade and expand their existing facilities from a capacity of 5.4 million gallons per day (MGD) to a design capacity of 25 MGD.

Mount Airy Capital Improvements Water Distribution, Town of Mount Airy, MD: RK&K was chosen to serve as the Town's primary consulting engineering firm. In addition to RK&K's engineering expertise and experience in water and wastewater engineering, the town was very interested in establishing water distribution system GIS mapping and field maps similar to those currently being used in the nearby town of Walkersville, Maryland, which RK&K created several years ago.

West Virginia State Board of Registration for Professional Engineers

MICHAEL W. MYERS

[redacted]

This is to certify that the above named PROFESSIONAL ENGINEER has met the requirements of the law, is duly registered and is entitled to practice engineering in the State of West Virginia.

EXPIRES December 31, 2016

DAVID G. VANSCOY, PE, PS

Director, Municipal and Transportation Engineering

Assignment: **Quality Assurance/Quality Control Manager**

Years of Experience: 43

Education: MS/Structural Engineering/1972
BS/Civil Engineering/1970

Registration: PE/1974/Civil Engineering
PS/1975/Professional Surveyor

Relevant Experience

Mr. Vanscoy has over 43 years of experience in public works projects. In 1987, Mr. Vanscoy started his own firm in Keyser, West Virginia, and served as City Engineer on a consultant basis. Mr. Vanscoy has diverse experience in design of water systems and facilities as well as construction management. In June 1999, Mr. Vanscoy joined RK&K as the regional manager in charge of the Keyser, West Virginia office and was later promoted to director. Relevant experience includes:

Frankfort Public Service District, Wiley Ford Water System, Mineral County WV: Project Manager for replacement of approximately 55,400 LF of water main to improve the service and quality of water. The project also included a new 300,000 water tank and booster station to provide improved water pressure and supply. The second phase of this project will be locating a suitable well(s) source.

Thayerville Water System, Garrett County, MD: Project Manager responsible for the design of a 600 gpm water treatment facility, a 1 MG & a 165,000 gallon water storage tanks, a 110 gpm & a 50 gpm remote booster stations, and distribution system consisting of various lengths of 2" through 12" dia. pipe.

Grant County Public Service District, Petersburg, WV: Project Manager on construction of 297,000 gal. Maysville water storage tank, Points pump station upgrade, relocation of 5,700 LF of water main line on U.S. Route 220 South. Project commenced in April of 2008, with substantial completion achieved on schedule in September 2008. Additional radio telemetry completed with available contingency funds due to completion of work within budget.

New Creek Water Association, New Creek, WV: Project Manager for evaluation of existing system. Project manager for design and construction of 140,000 gallon storage tank; 350,000 gallon storage tank; 30,000 gallon storage tank; new booster station; upgrade booster pumping stations; addition of fire hydrants to system; drilling of well.

Charles Town Utility Board On-Call Water & Sewer Projects, Charles Town, WV: Project Manager responsible for overseeing design and construction of various water and sewer on-call projects. Projects range from the design of new sewage lift stations, modifications to an existing sewage lift station, design of over 20,000 LF of sewage force mains, to overseeing painting of two elevated water storage tanks and water treatment plant.

Town of Lonaconing, Maryland, New Water Distribution System: Project Manager for the design and construction of over 40,000 LF of water line replacement, touch read and radio read water meters to existing system through multiple projects in various phases.

Frankfort Public Service District, Water System Evaluation, Mineral County, WV: Project Manager for an extensive evaluation of the Frankfort PSD water system including the original Fort Ashby PSD system. Study involved a source to tap evaluation. Over $12 million worth of improvements were identified in the study. At this time RK&K is assisting in securing funding .

Northern Mineral County Regional Sewer System Project, Frankfort Public Service District, Mineral County, WV: Project Manager for the design, construction and inspection of this $39 million regional sewer system project which includes over 64 miles of sewer collection; 15 pump stations and a new 1.20 MGD wastewater treatment plant including biological nutrient removal.

West Virginia State Board of Registration
for Professional Engineers

DAVID G. VANSCOY
[redacted]

This is to certify that the above named PROFESSIONAL ENGINEER has met the requirements of the law, is duly registered and is entitled to practice engineering in the State of West Virginia.

EXPIRES December 31, 2016

JOHN W. COLE, PE

Project Manager

Assignment: **Project Manager**

Years of Experience: 14

Education: BS/Civil Engineering/2001

Registration: PE/2008/Civil Engineering

Relevant Experience

Mr. Cole is an engineer in the Keyser Office with over 14 years of design experience in public and private works projects. His career started as a summer interim for the West Virginia Department of Highways in 2000. Since joining RK&K in 2001, Mr. Cole has developed a diverse experience in design of water and wastewater treatment plants, distribution and collection systems, residential subdivision development as well as construction management. In addition to design and construction experience, Mr. Cole is experienced in all facets of engineering projects from conception to completion including but not limited to planning, permitting, and funding. Relevant experience includes:

Charles Town Utility Board On-Call Water & Sewer Projects, Charles Town, WV: Project Manager responsible for overseeing design and construction phase services for various water and sewer on-call projects. What started in 2009 with Task 1 for overseeing the painting of a water storage tank ($17k fee) has evolved in 2015 to numerous tasks and sub-task totaling more than $2.95M in fees. Through the 18 individual Tasks, not counting the various sub-Tasks, the various water and sewer projects have ranged from the design and construction of new sewage lift stations; modifications to existing sewage lift stations; over 10 miles of water mains and sewage force mains; improvements to two of the Utility's three WWTP's; improvements to the single WTP including a 1 MG water storage tank; preparation of numerous preliminary engineering reports, evaluations, studies, and plans; construction of three emergency back-up generators; to overseeing painting of several elevated water storage tanks and water treatment plant. In addition to the basic water and sewer work, other work for the Utility has included, the creation of a wetland to meet a consent order; development of both a water and sewer system wide SCADA; expert witness; reviewing contractor's certified payrolls adhering to Davis-Bacon; and developing project funding strategies.

Wiley Ford Water System, Mineral County WV: Developed the hydraulic model on the replacement of the approximately 55,400 LF of water mains to improve the service and quality of water; assisted in the permitting applications and construction funding; construction of a new 300,000 water tank and booster station to provide improved water pressure and supply; development of well source to supplement the existing water connection.

Northern Mineral County Regional Sewer System Project, Frankfort Public Service District, Mineral County, WV: Project Engineer assisting with design of this $39 million regional sewer system project which includes over 64 miles of sewer collection; 15 pump stations and a new 1.20 MGD wastewater treatment plant including biological nutrient removal.

Garrett County Department of Public Utilities, Thayerville Water System, Garrett County, MD: Senior Project Engineer responsible for the design of a 600 gpm water treatment facility, a 1 MG & a 165,000 gallon water storage tanks, a 110 gpm & a 50 gpm remote booster stations, and approximately 41,000 LF of distribution system consisting of various lengths of 2" through 12" dia. pipe.

New Creek Water Association – Construction Contract 3, New Creek, WV: Responsible for overseeing contractor during the cleaning, rehabilitation, and painting of a 100,000 gallon and 50,000 gallon water storage tanks.

LaVale Sanitary Commission, LaVale, MD: assisted in the design and construction of replacement of distribution mainline and services.

New Creek Water Association – Construction Contract 1 & 2, New Creek, WV: Assisted in the design and construction of approximately 5-miles of water line extension and the addition of fire hydrants to existing system.

West Virginia State Board of Registration for Professional Engineers

JOHN W. COLE
[redacted]

This is to certify that the above named PROFESSIONAL ENGINEER has met the requirements of the law, is duly registered and is entitled to practice engineering in the State of West Virginia.

EXPIRES December 31, 2016

ROBERT A. AMTOWER, PE, PS

Project Manager

Assignment:	**Environmental Permitting**
Years of Experience:	14
Education:	MS/Civil Engineering/1976
	BS/Civil Engineering/1974
Registration:	PE/1979/Civil Engineering
	PS/Professional Surveyor/1995

Relevant Experience

Mr. Amtower has 38 years of experience in public transportation projects. Mr. Amtower worked with the WV Division of Highways for over 30 years, where he held various positions including Bridge Evaluation Engineer, District Maintenance Engineer, Director of Engineering, and District Engineer. Mr. Amtower's duties have included evaluation and load rating of bridges, managing the highway design and maintenance programs, oversight of construction activities, and development of various other programs related to highways. Since 1987, Mr. Amtower has been an active Board of Director Member (currently Treasurer) of the New Creek Water Association seeing the system expand from 500 customers to over 1,300 customers.

VA Water and Sewer Deficiencies, VA Hospital, Martinsburg, WV: Managed the development of sewer and water line replacement as well as renovation of existing manholes and sewer line. Work included 2,200LF new sanitary sewer and manhol3es; renovation of 1,300LF existing sewer line and manholes; and 1,100LF 10" ductile iron waterline. Developed traffic control plan for complete street network. Coordinated design /construction related issues with the contractor and owner.

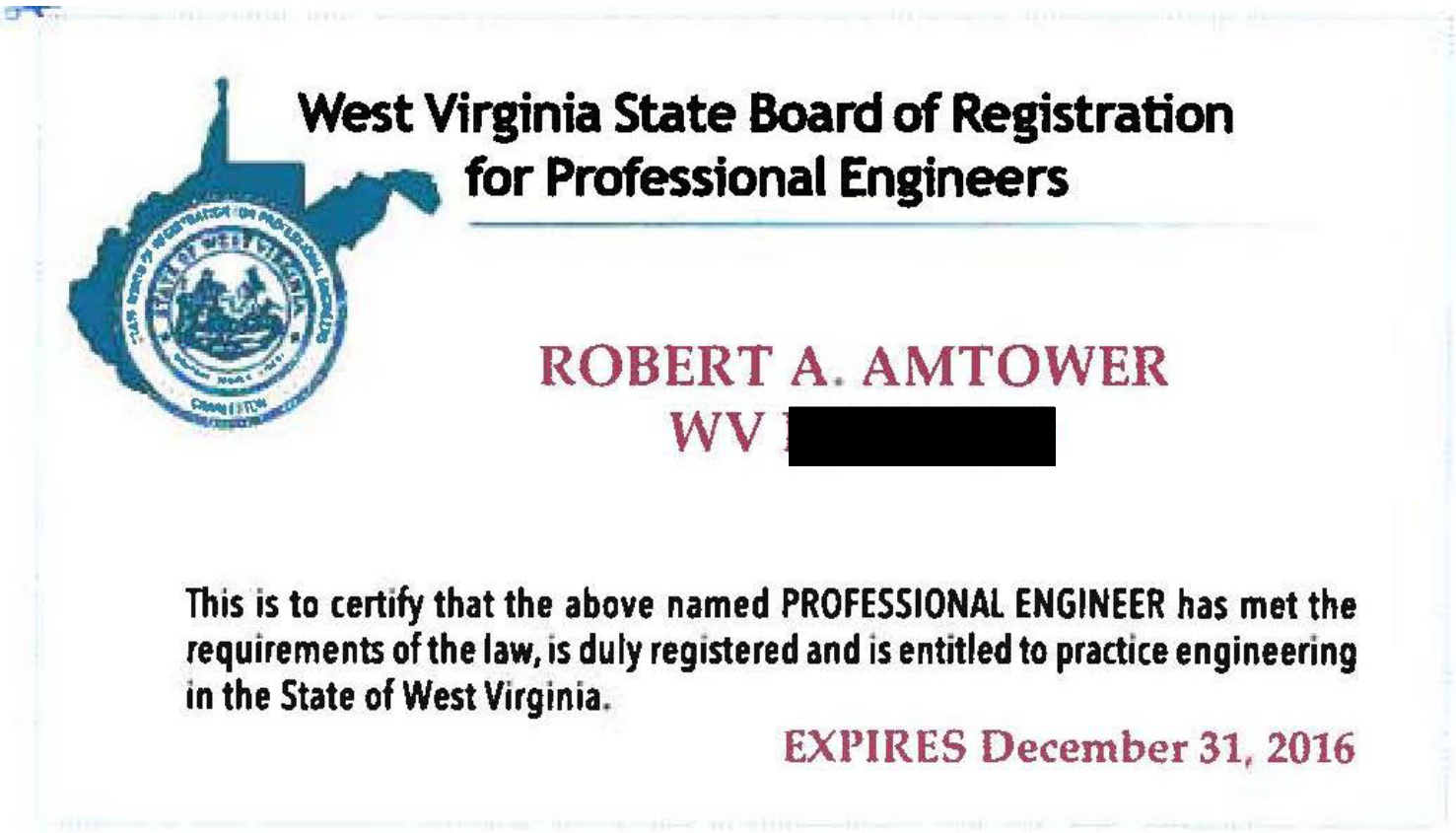
New Creek Water Association: Currently serving (25 years) on Board of Directors as a non-paid capacity. Work included monitoring budgets, operating costs, planning, and developing strategies for system; maintenance and growth.

Dan's Mountain Access Road and Storage Building: Assisted with finalizing the design of a gravel access road as well as site plan and design of small storage building. The access road design included culvert design work, erosion and sediment controls, cost itemization for the project. Also included was development of specifications for various construction items for the storage building.

Keyser McCoole Bridge: Project Engineer for design of a replacement bridge on US 220 across the Potomac River between Keyser, WV and McCoole, Md. The design emphasized the relocation design of water and sewer utilities, design of relocated streets, complex storm water discharge network, right of way features, and cost estimating.

WVDOT, Hampshire County Maintenance Facility: Developed a site plan for a new maintenance headquarters complex. The work included development of permanent storm water ponds as well as ditch line infiltration and storm drainage system, and design of utilities. Developed the plan for paving of the parking lots.

WVDOT, Maintenance Engineer : Served 15 years as Maintenance Engineer for a seven county region of the Eastern Panhandle of West Virginia. Most recent work was the development of a site plan that included new water service, sewer relocation, storm after discharge, and siting of two new restroom facilities at welcome centers on Interstate 81 in Berkeley County, West Virginia. Managed the highway entrance permitting program.



West Virginia State Board of Registration for Professional Engineers

ROBERT A. AMTOWER
WV [redacted]

This is to certify that the above named PROFESSIONAL ENGINEER has met the requirements of the law, is duly registered and is entitled to practice engineering in the State of West Virginia.

EXPIRES December 31, 2016

DANIEL W. TICHINEL, PE

Project Engineer

Assignment: **Design**

Years of Experience: 5

Education: BS/Civil Engineering/2010

Registration: PE/2015/Civil Engineering

Relevant Experience

Mr. Tichinel joined RK&K as a project engineer in September of 2015. A licensed professional engineer with five years of project engineering and management experience, Mr. Tichinel previously worked as a senior reliability engineer for Verso Corporation in Luke, MD. Relevant experience includes:

Frankfort Public Service District, Water System Upgrade, Contract 4- Pump Station Rehabilitation: Project Engineer responsible for the design upgrade of two existing pump stations. Results include increasing pump station pumping capacities & reducing annual operating energy costs.

Senior Reliability Engineer, Verso Corp. (Formerly New Page), Luke, MD January 2012 – September 2015:

- Project Engineer/Manager for the Lime Kiln Outages to complete maintenance & capital projects. Results include elimination of kiln component failures and completing the outages ahead of schedule and within budget.
- Project Manager during Paper Machine Outages for scheduled maintenance which includes management of contractors or mill union mechanics to perform various reliability projects. Accomplishments include improving fan bearing life from 3 months to at least 2 years and extending the life of a gear-reducer which eliminated maintenance costs of over $100k.
- Project Engineer/Manager for bulk oil storage tank capital upgrade, resulting in decreasing lube filter usage costs by $50k annually.
- Project Manager of Paper Machine Dryer Can NDT Inspections to confirm the can's maximum allowable working pressure and repair/replace loose or missing internal parts to avoid a catastrophic failure.
- Continually improving the Mill's Safety Program through participation in safety investigations and ensuring hazard elimination.
- Promoted to Senior Reliability Engineer in May 2013 due to outstanding performance.

Project Engineer, Garrett College, McHenry, MD 2010-Jan. 2012:

- Realigned road resulting in safer sight distance for intersection finishing ahead of schedule and within budget.
- Researched, summarized, and analyzed financial data including operating costs which lead to the reduction of the College's municipal waste contract by $20k annually.
- Three academic building roof replacements to eliminate roof leaks and improve the aesthetics of campus facilities. Completed project within budget and on time.
- Upgraded the Northern Outreach Center ground floor to comply with ADA & fire code increasing the building's classroom space by more than 3000 sq. ft.

Environmental Feasibility Assistant, Bucknell University, Lewisburg, PA 2008-2010: Lead Engineering Assistant of a four person working team for an externally-sponsored project to investigate the feasibility of anaerobic conversion of municipal wastewater to methane.

DLLR

LICENSE " REGISTRATION " CERTIFICATION " PERMIT

STATE OF MARYLAND

DEPARTMENT OF LABOR, LICENSING AND REGULATION

Lawrence J. Hogan, Jr.
Governor
Boyd K. Rutherford
Lt. Governor
Kelly M. Schulz
Secretary

STATE BOARD FOR PROFESSIONAL ENGINEERS

CERTIFIES THAT:

DANIEL W TICHINEL

IS AN AUTHORIZED: 05 - PROFESSIONAL ENGINEER

LIC/REG/CERT	EXPIRATION	EFFECTIVE	CONTROL NO
[redacted]	06-07-2017	N/A	4709416

Daniel W. Tichinel

Signature of Bearer

Kelly M. Schulz

Secretary DLLR

BRANDON J. FELTON

Engineer

Assignment: **Design**

Years of Experience: 9

Education: BS/Mechanical Engineering/2006

Relevant Experience

Mr. Felton is a West Virginia University Mechanical Engineering Graduate with over 9 years of experience in public and private works projects. His career started in the water and waste water industry as a maintenance worker for the Frankfort Public Service District in 2003. Since joining RK&K in 2006, Mr. Felton has developed experience in design of equipment pertaining to water and wastewater treatment systems. Relevant experience includes:

Grant County Public Service District Water System Improvements– Points Pump Station: Worked on the design of upgrading the existing Point's potable water pump station with new 280 GPM vertical multi-stage pumps and all related plumbing, controls, metering, and telemetry.

Frankfort Public Service District – Wiley Ford Water Line Replacement Project: Assisted in the design of a new water treatment facility including a new well and corresponding 90 GPM pump, 297,000 gallon water storage tank, and a chemical injection/control building. Also assisted in the right-of-way acquisition for the corresponding water distribution system.

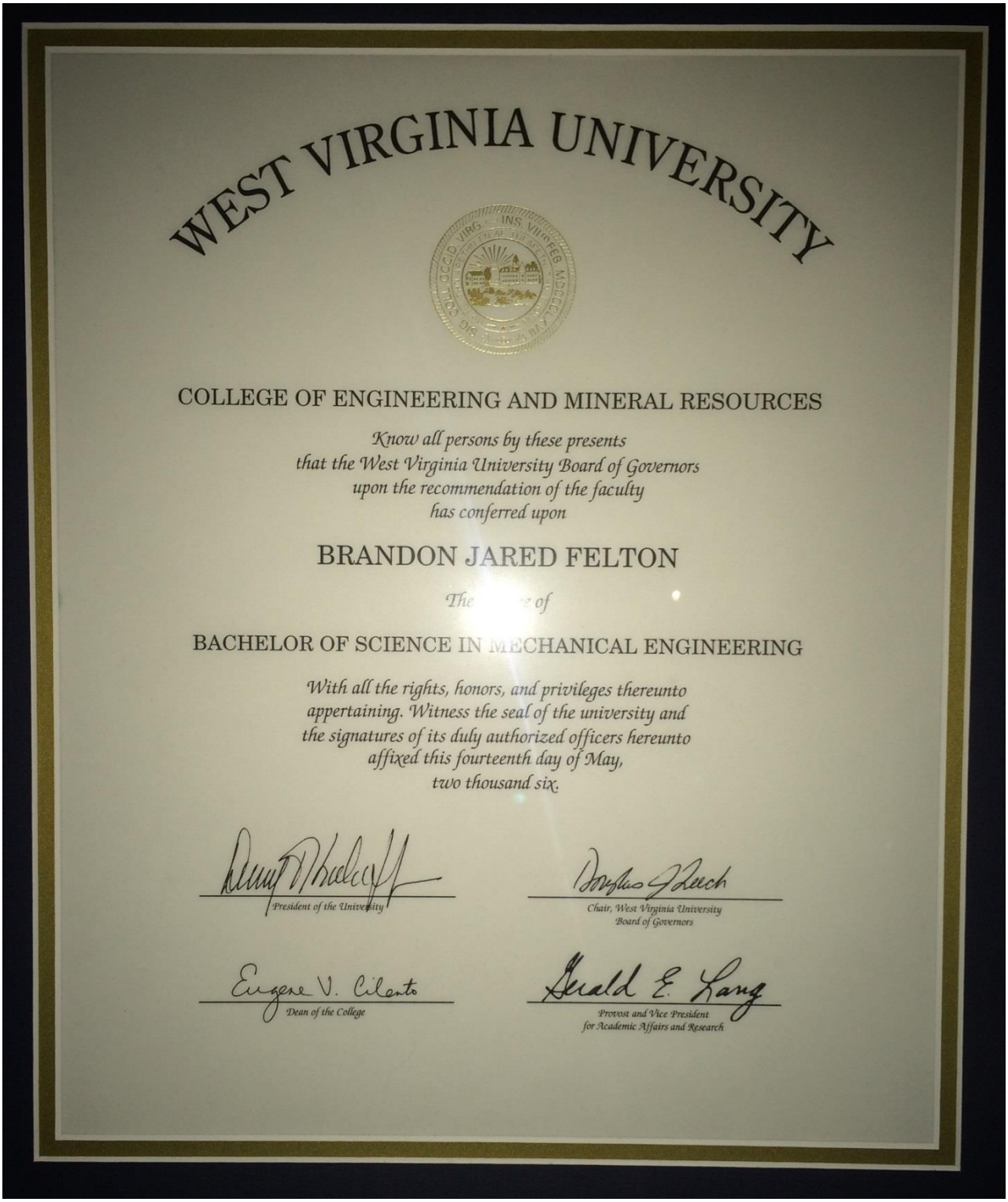
Town of Lonaconing Water Improvement Project – Charlestown Road Water Line Extension: Assisted with design of a new 90 GPM vertical multi-stage water pump station with remote below-ground water storage tank and corresponding distribution system.

Garrett County Department of Public Utilities – Thayerville Water Distribution System Project: Assisted in the design of both a new 100 GPM vertical multi-stage water pump station and a new 300 GPM water treatment plant utilizing vertical turbine pumps.

Frankfort Public Service District - Northern Mineral County Regional Sewer System, Phase 1 & 2: Assisted in the design of a new 0.6 MGD SBR waste water treatment plant with capabilities of future expansion to 1.2 MGD. Design work included various mechanical elements of the plant including plumbing, pumps, blowers, screen/grit removal, and belt press. Also assisted in the design and right-of-way acquisition for the corresponding 9-mile collection system feeding the new WWTP.

Greater Marion Public Service District Sanitary Sewer Improvements – Carolina & Idamay Sewage Pump Stations: Assisted in the design of the 250 GPM Carolina submersible sewer pump station and the 130 GPM Idamay vacuum-prime sewer pump station consisting of two pumps in series to meet high head requirements.

Charles Town Utility Board Water & Sewer Improvements– Huntfield Pump Station & Transfer Pump Station: Assisted in the design of upgrading the existing Huntfield sewer pump station with new 600 GPM submersible sewer pumps and related plumbing and controls. Also assisted in the design of a new 375 GPM submersible sewer pump station used to transfer sewer flow between two separate treatment plants.



WEST VIRGINIA UNIVERSITY

COLLEGE OF ENGINEERING AND MINERAL RESOURCES

Know all persons by these presents
that the West Virginia University Board of Governors
upon the recommendation of the faculty
has conferred upon

BRANDON JARED FELTON

The degree of

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

With all the rights, honors, and privileges thereunto
appertaining. Witness the seal of the university and
the signatures of its duly authorized officers hereunto
affixed this fourteenth day of May,
two thousand six.

President of the University

Chair, West Virginia University Board of Governors

Eugene V. Cilento
Dean of the College

Gerald E. Lang
Provost and Vice President for Academic Affairs and Research

ANDREW P. SUTER

Engineer

Assignment: **Design**

Years of Experience: 8

Education: BS/Civil Engineering/2007

Relevant Experience

Mr. Suter is a West Virginia University Civil Engineering Graduate with over 9 years of experience in public and private works projects. His career started as a summer interim for the West Virginia Department of Highways in 2004. In 2006, he joined RK&K as an intern during the summer and in the summer of 2007, began working full time. Relevant experience includes:

Town of Lonaconing Water Improvement Project – Water Meter Replacement: Responsible for field locating existing meters, as well as coordinating with local PSD to verify which meters were full replacements and partial replacements.

Frankfort Public Service District - Northern Mineral County Regional Sewer System, Phase 1: Assisted in the design and layout of treatment plant. Assisted in several building design layouts and yard piping line work throughout the plant.

Frankfort Public Service District – Northern Mineral County Regional Sewer System, Phase 2: Assisted with sewer line layout through northern end of Mineral County. Assisted in replacing several subdivision sewer package plants.

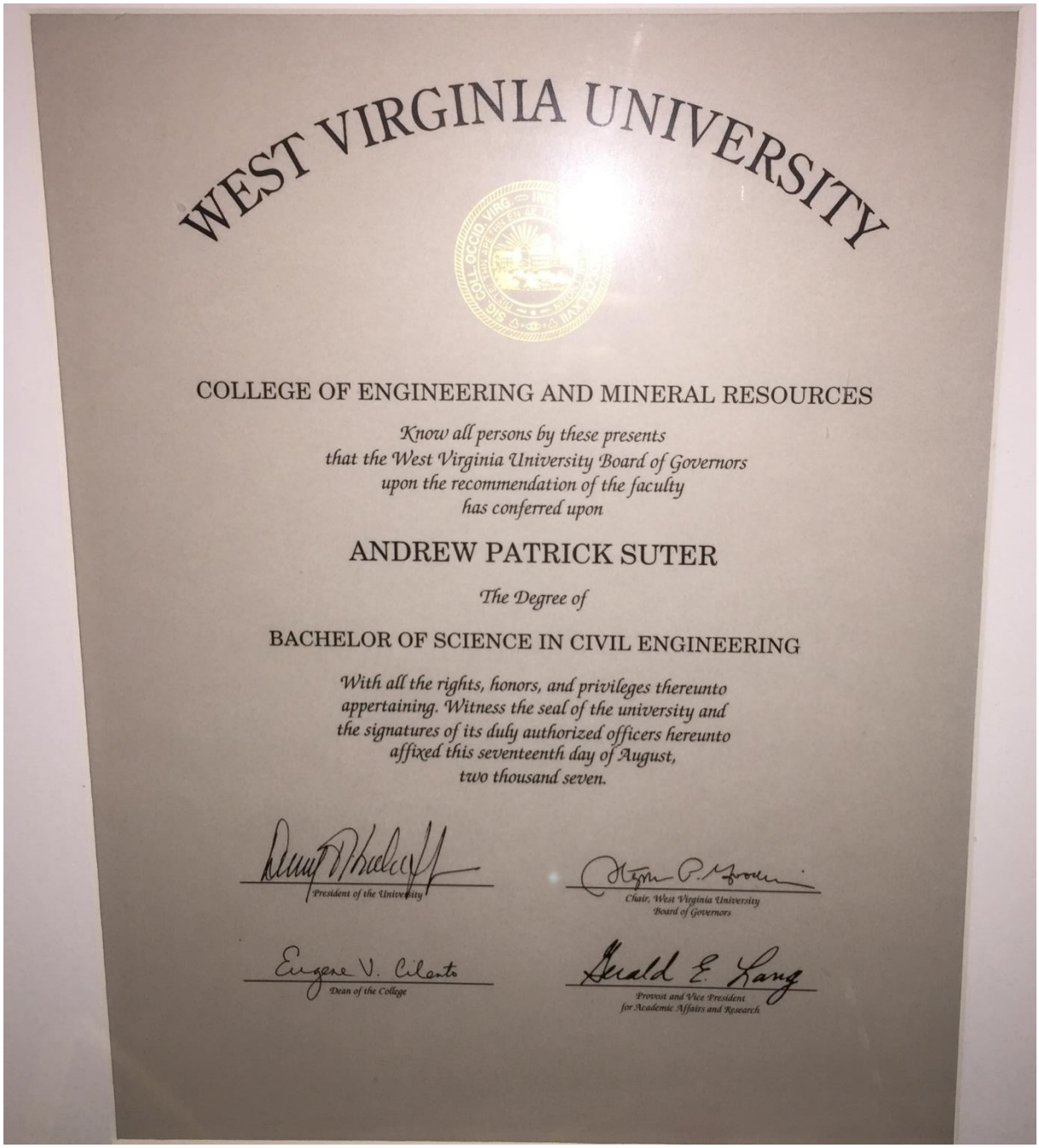
Charles Town Utility Board Water & Sewer Improvements– Huntfield Pump Station & Transfer Pump Station: Assisted with inspection for painting inside water tank.

WV Department of Transportation, Keyser McCoole Bridge – McCoole Water & Sewer Pump Station: Assisted with design of building and site layout and development. Assisted in the water and sewer line layout, crossing under the Potomac River.

Tuscan Ridge, Town of Davis Subdivision, Phase 3-4, WV: One of the project designers responsible for roadway layout and design, as well as lots and right-of-way design. Assisted in E & S Design of Phase 3, as well as water tank site design on phase 4.

Dan's Mountain Access Road and Storage Facility, MD: Assisted in design of access road, and erosion and settlement control plan. Also assisted in design of storage facility, as well as site layout and development.

Potomac Plaza, Greyhound Properties, L.L.C., Mineral County, WV: Assisted in the design of foundations for building 601 and 701 shopping centers.



WEST VIRGINIA UNIVERSITY

COLLEGE OF ENGINEERING AND MINERAL RESOURCES

Know all persons by these presents
that the West Virginia University Board of Governors
upon the recommendation of the faculty
has conferred upon

ANDREW PATRICK SUTER

The Degree of

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

With all the rights, honors, and privileges thereunto
appertaining. Witness the seal of the university and
the signatures of its duly authorized officers hereunto
affixed this seventeenth day of August,
two thousand seven.

President of the University

Chair, West Virginia University
Board of Governors

Eugene V. Cilento
Dean of the College

Gerald E. Lang
Provost and Vice President
for Academic Affairs and Research

MATTHEW J. YOUNGBLOOD, EIT

Engineer

Assignment: **Construction Engineering**

Years of Experience: 9

Education: BS/Civil Engineering/2006
EIT/2010/#9152

Relevant Experience

Mr. Youngblood is a West Virginia University Civil Engineering Graduate with over 9 years of experience in public and private works projects. His career started as a summer intern for the West Virginia Department of Highways in 2001. Since joining RK&K in 2006, Mr. Youngblood has developed experience in the design of water and sewer infrastructure. Relevant experience includes:

Grant County Public Service District, Petersburg, WV: Assisted project engineer on construction of 297,000 gal. Maysville water storage tank, Points pump station upgrade, relocation of 5,700 LF of water main line on U.S. Route 220 South. Project commenced in April of 2008, with substantial completion achieved on schedule in September 2008. Additional radio telemetry completed with available contingency funds.

Town of Lonaconing, MD, New Water Distribution System: Assisted project engineer on construction of over 40,000 LF of water line replacement and extension on existing system. Two of these projects were AML funded. Duties included assisting with interpretation of contract drawings and specifications; conducting meetings; assuring that contractor complies with contract requirements; supervising field representatives; reviewing payment applications and preparing change orders.

Deep Creek Lake State Park, Garrett County MD: Designer on the replacement of water line and two chlorination feed stations. Designed an RV dump station to expand the traffic volume for the camp ground.

Wiley Ford Water System, Mineral County WV: Assisting construction engineer on replacement of approximately 55,400 LF of water main to improve the service and quality of water. The project also includes a new 300,000 water tank and booster station to provide improved water pressure and supply. Duties include assisting with interpretation of contract drawings and specifications; conducting meetings; assuring that contractor complies with contract requirements; supervising field representatives; reviewing payment applications and preparing change orders.

Greater Marion Public Service District, Marion County, WV: Assisted with Inflow and Infiltration study with sewer camera inspections. Designer on vacuum sewer line relocation to improve the efficiency of the sewer collection system in the Town of Idamay. Assisting with design to replace the vacuum system with gravity and force main sewer system.

Grant County Public Service District, Petersburg, WV: Engineer on construction of 297,000 gal. Maysville water storage tank, Points pump station upgrade, relocation of 5,700 LF of water main line on U.S. Route 220 South. Project commenced in April of 2008, with substantial completion achieved on schedule in September 2008. Additional radio telemetry completed with available contingency funds due to completion of work within budget.

The State Board of Registration For Professional Engineers of West Virginia

Herewith Certifies That

Matthew J. Youngblood

having completed the educational requirements satisfactory to the Board and passed the Fundamentals of Engineering Examination consisting of mathematics, the physical sciences and the principles of engineering, is hereby enrolled as an

Engineer Intern

Certificate Number – [redacted]

After completing a sufficient period of engineering experience of a character satisfactory to the Board, one may take the final examinations to complete the requirements of the Law for registration as a Professional Engineer in the State of West Virginia.

Issued in Charleston, WV on June 2, 2010

President

Vice-President

Secretary

WEST VIRGINIA UNIVERSITY

COLLEGE OF ENGINEERING AND MINERAL RESOURCES

Know all persons by these presents
that the West Virginia University Board of Governors
upon the recommendation of the faculty
has conferred upon

MATTHEW JOSEPH YOUNGBLOOD

The Degree of

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

With all the rights, honors, and privileges thereunto
appertaining. Witness the seal of the university and
the signatures of its duly authorized officers hereunto
affixed this twenty eighth day of December,
two thousand six.

President of the University

Chair, West Virginia University
Board of Governors

Eugene V. Cilento
Dean of the College

Gerald E. Lang
Provost and Vice President
for Academic Affairs and Research

CHARLES L. ABERNATHY

Engineer

Assignment: **Design**

Years of Experience: 1

Education: BS/Civil Engineering/2014

Relevant Experience

Mr. Abernathy is a West Virginia University Civil Engineering Graduate with over 1 year of experience in public and private works projects. His career started as a Civil Engineering Co-op with the West Virginia Division of Highways for two years during college. Since joining RK&K in 2014, Mr. Abernathy has developed experience in design of various water and wastewater systems. Relevant experience includes:

Town of Oakland – Water Distribution System and Sewer Collection System Improvements: Assisted with the design of various waterline replacements and extensions to correct water pressure issues, assisted in the design of a water booster pump for the highest parts of the existing water system. Worked on the design of the sewer line replacement project and bar screen replacement at the Town's main pump station for the wastewater treatment plant. Also prepared the Preliminary Engineering Report (PER) and Environmental Report (ER) that was submitted to USDA Rural Utility Service (RUS) for funding.

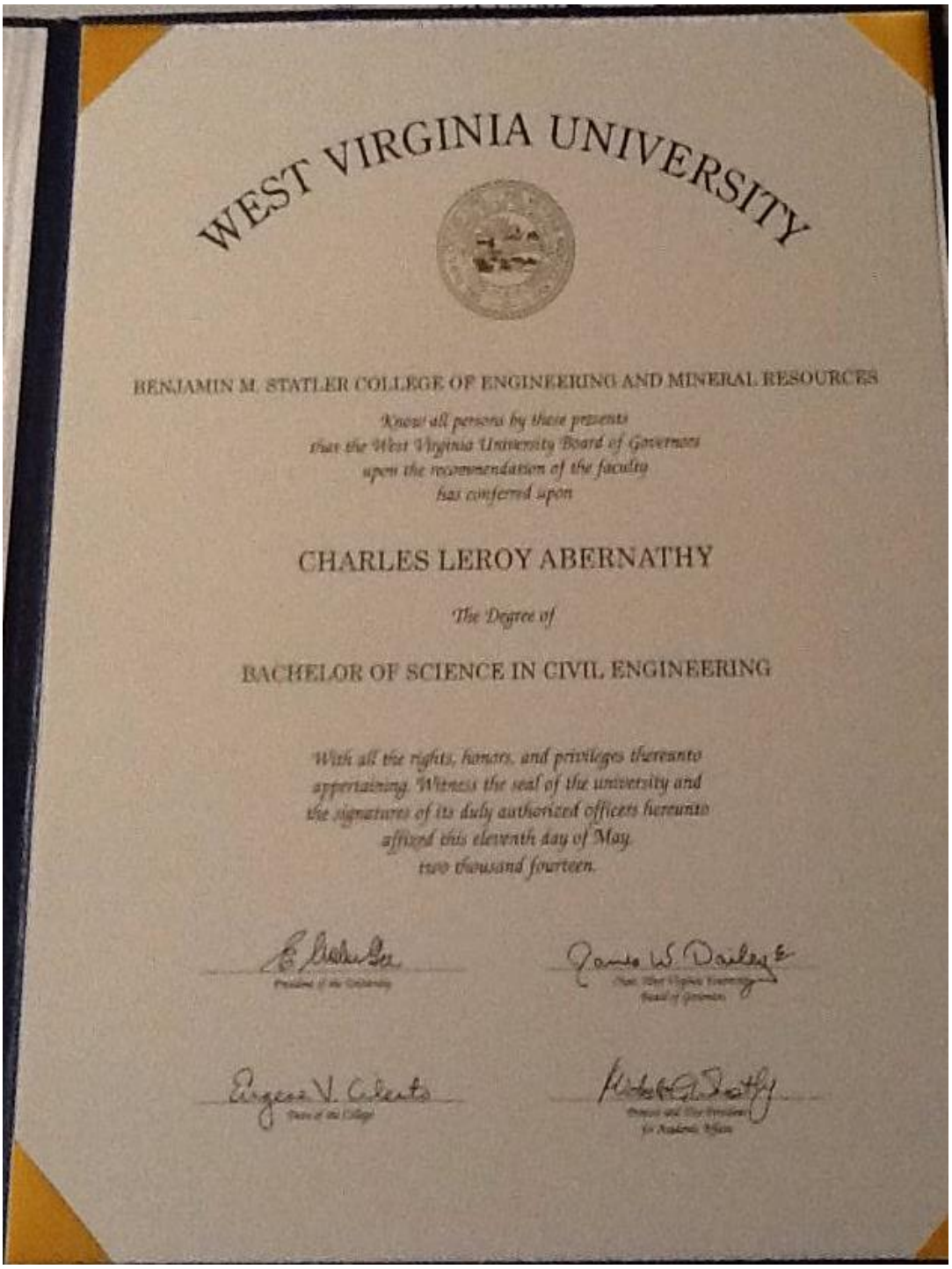
Frankfort Public Service District – Waterline Replacement and Extensions: Assisted on the design of various waterline replacements and extensions throughout the Frankfort Public Service District, Mineral County, West Virginia.

Frankfort Public Service District – Northern Mineral County Regional Sewer System, Sewer Replacement: Assisted with cost estimates, supplemental to the Preliminary Engineering Report, and repackaging of the plans for the project to rebid.

Town of Lonaconing Water Improvement Project – Water Station Run Road, Potomac Hollow Road, & Koontz WTP Backwash Line: Assisted with the design of the waterline extension projects along Water Station Run Road in Lonaconing and Potomac Hollow Road in Barton, assisted in the design of the water booster pump along Water Station Run Road. Also worked on the design of the replacement of the backwash line from the Koontz Water Treatment Plant in Lonaconing, Maryland.

Greater Marion Public Service District Investigation and Implementation (I&I): Assisted in the collection and analysis of flow data from the Carolina and Idamay pump stations and compared the data to the Worthington Wastewater Treatment Plant for the prepared report for the I&I Study.

Charles Town Utility Board – Hydraulic Model: Assisted with the hydraulic Model for the Charles Town Utility Board, Charles Town, West Virginia. The system included over 6,000 different elements that was obtained from GIS mapped data. The hydraulic model is used to see what would happen if lines are added or changed to the existing system.



WEST VIRGINIA UNIVERSITY

BENJAMIN M. STATLER COLLEGE OF ENGINEERING AND MINERAL RESOURCES

Know all persons by these presents
that the West Virginia University Board of Governors
upon the recommendation of the faculty
has conferred upon

CHARLES LEROY ABERNATHY

The Degree of

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

With all the rights, honors, and privileges thereunto
appertaining. Witness the seal of the university and
the signatures of its duly authorized officers hereunto
affixed this eleventh day of May,
two thousand fourteen.

LARRY W. MCDOWELL, PE, PS

Project Engineer

Assignment: **Construction Management**

Years of Experience: 43

Education: BS/Civil Engineering/1970

Registration: PE/1978/Civil Engineering

Relevant Experience

Mr. McDowell has over 43 years of diverse engineering experience associated with public works projects. Beginning in 1972, Mr. McDowell was employed by Stone and Webster Engineering Corporation as a senior field engineer on construction of a fossil fuel power plant for 3 years and then entered the mining industry, working for 4 years as mining engineer at Laurel Run Mining Company. In 1979, Mr. McDowell accepted employment with Allegheny Mining Corporation, a West Virginia and Maryland-based surface mining company, as chief engineer. Beginning in 1987, Mr. McDowell operated a consulting engineering and surveying business in Mt. Storm, West Virginia until accepting employment with RK&K in December of 1999. Relevant experience includes:

Maysville Water Storage Tank, Grant County Public Service District, Petersburg, WV: Project Engineer on construction of 297,000 gal. Maysville water storage tank, Points pump station upgrade, relocation of 5,700 LF of water main line on U.S. Route 220 South. Project commenced in April of 2008, with substantial completion achieved on schedule in September 2008. Additional radio telemetry completed with available contingency funds due to completion of work within budget.

Town of Lonaconing, MD, New Water Distribution System: Project Engineer on construction of over 40,000 LF of water line replacement and extension on existing system. Two of these projects were AML funded. Duties included interpretation of contract drawings and specifications; conducting meetings; assuring that contractor complies with contract requirements; supervising field representatives; reviewing payment applications and preparing change orders.

New Creek Water Association, New Creek, WV: Project Engineer for evaluation of existing system. Project engineer for design and construction of 140,000 gallon storage tank; 350,000 gallon storage tank; 30,000 gallon storage tank; new booster station; upgrade booster pumping stations; addition of fire hydrants to system, drilling of well.

Wiley Ford Water System, Mineral County WV: Construction Engineer for replacement of approximately 55,400 LF of water main to improve the service and quality of water. The project also includes a new 300,000 water tank and booster station to provide improved water pressure and supply.

Capon Bridge Industrial Park, Capon Bridge, WV: Project Engineer for the development of the park including surveying, sewage treatment plant, sewage collection system, water distribution system, and water storage tank.

Corporation of Harpers Ferry, Water Storage Tank Replacement Project, Harpers Ferry, WV: Project Engineer responsible for construction of 241,000 gallon water storage tank including demolition of existing tank. Duties included interpretation of contract drawings and specifications; conducting meetings; assuring that contractor complies with contract requirements; supervising field representatives; reviewing payment applications and preparing change orders.

Northern Mineral County Regional Sewer System Project, Frankfort Public Service District, Mineral County, WV: Project Engineer for the construction and inspection of this $39 million regional sewer system project which includes over 64 miles of sewer collection; 15 pump stations and a new 1.20 MGD wastewater treatment plant including biological nutrient removal.


West Virginia State Board of Registration
for Professional Engineers
LARRY W. MCDOWELL
WV [redacted]
This is to certify that the above named PROFESSIONAL ENGINEER has met the requirements of the law, is duly registered and is entitled to practice engineering in the State of West Virginia.
EXPIRES December 31, 2016

CHRISTOPHER S. DARBER

Resident Project Representative

Assignment: **Construction Inspection**

Years of Experience: 21

Education: Sheppard AFB
Tech School/1993
High School Diploma/1992

Registration: Utilities System Specialist; Nuke Gauge Certified

Relevant Experience

Mr. Darber has 21 years experience in the construction industry, primarily associated with sewer and water systems. Mr. Darber's career began as a Utilities System Specialist where he maintained the water and sewer system on Andrews AFB, plus maintained various water and sewer plants surrounding the base. He is very detailed in his work, and he is proficient with computers.

Lonaconing Water System, Allegany County, MD: Construction Inspector responsible for inspecting water line installation as well as the replacement of several old storm sewer inlets as part of Phase IV.

Wiley Ford Water System, Mineral County WV: Construction Inspector responsible for inspection of replacement of approximately 55,400 LF of water main and a new 300,000 water tank and booster station. Duties include responsibility of daily logs, adherence to specifications, measurement of quantities, addressing citizen complaints, and supervision of other inspectors.

New Creek Water Association, New Creek, WV: Construction Inspector for construction of 140,000 gallon storage tank; 350,000 gallon storage tank; 30,000 gallon storage tank; new booster station; upgrade booster pumping stations; addition of fire hydrants to system, drilling of well.

LaVale Sanitary Commission, U.S. Route 40 (National Highway) Water Distribution System Improvement Project, LaVale, MD: Chief Inspector responsible for compliance with specifications, daily report of activities, and measurement of quantities installed. Project included approximately 22,000 LF of water distribution line, 38 fire hydrants, 280 meter assemblies, and 24 connections to existing water line.

Northern Mineral County Regional Sewer System – Phase 1, Mineral County, WV: Chief Inspector responsible for daily logs, adherence to specifications, measurement of quantities, addressing citizen complaints, and supervising other inspectors. Project consists of construction of 1.20 mgd SBR WWTP and 10.3 miles of sewage collection system.

Frankfort Public Service District Wiley Ford Sewer Project, Mineral County, WV: Chief Inspector on construction of new gravity collection and force main sewage system to replace individual septic systems and old collection system. Duties include responsibility of daily logs, adherence to specifications, measurement of quantities, addressing citizen complaints, and supervision of other inspectors.

Ridgeley Sewer Improvement: Chief Inspector responsible for daily logs, adherence to specifications, measurement of quantities, addressing citizen complaints, and supervising other inspectors. The project included installation of 18,400 Lf of main line sanitary sewer, 91 manholes, 327 single house connections, 1,800 LF of storm drain, and 17 storm drain inlets throughout the Town of Ridgeley.

West Virginia
Division of Natural Resources
Park and Recreation Division

Babcock State Park
Wastewater Treatment Plant Replacement

Droop Mountain Battlefield State Park
Water Supply Improvements

SECTION 3

Project Understanding / Approach

RK&K ENGINEERS Responsive People • Creative Solutions

PROJECT UNDERSTANDING

West Virginia Division of Natural Resources (DNR) is seeking to procure the services of an Engineering/Architectural firm to meet three specific project goals/objectives to upgrade Babcock Lake State Park's wastewater treatment plant and Droop Mountain Battlefield State Park's drinking water system. The goals are as follows:

- **Goal/Objective 1:** Review existing plans and conditions as well as the operation of the park and evaluate while communicating effectively with the Owner to determine a plan that can be implemented in a manner that will minimize disruption to concurrent operation of the facility and meet all objectives.
- **Goal/Objective 2:** As a portion of this process outlined in Objective 1, provide all necessary services to design the facilities described in the EOI in a manner that is consistent with the DNR needs, objectives, current law, and current code; while following the plan to design and execute the project within the project budget.
- **Goal/Objective 3:** Provide Construction Contract Administration Services with competent professionals that ensures the project is constructed and functions as designed.

With these project objectives in mind, RK&K has gathered a responsive team that will provide creative solutions to meet DNR's project goals. The remainder of Section 3 addresses DNR's project objectives.

RK&K will develop a priority list of required improvements and estimated costs to enable the projects to proceed. RK&K will provide necessary services including preliminary and final design; assistance in obtaining all required permits; preparation of construction plans, specifications and bidding documents, assistance with bidding and award; construction administration; and inspection services.

OVERVIEW OF PROJECT SITES

Whereas Babcock Lake State Park and Droop Mountain Battlefield State Park projects present different scopes of work, both parks have one thing in common: Park Management & DNR have done an excellent job maintaining the parks. The following paragraphs depict RK&K's overview and project understanding for each site.

Babcock State Park

Situated in the rugged southeastern border of West Virginia near Clifftop, West Virginia, Babcock State Park provides many outdoor opportunities for fishing and boating at Boley Lake, a swimming pool, 28 cabins, a 52-unit campground, numerous picnic areas, hiking, and the operable Glade Creek Grist Mill. The Civilian Conservation Corps constructed much of the park in the 1930's.

On October 27, 2015, Daniel Tichinel, PE, RK&K project engineer had the privilege of touring the park with Clinton Cochran, Park Superintendent to gather a better understanding of the park's needs for a package wastewater treatment plant (WWTP) upgrade. As seen in Figure 1, Babcock's WWTP is located near the park's pool with effluent discharging into an unnamed tributary of Manns Creek.

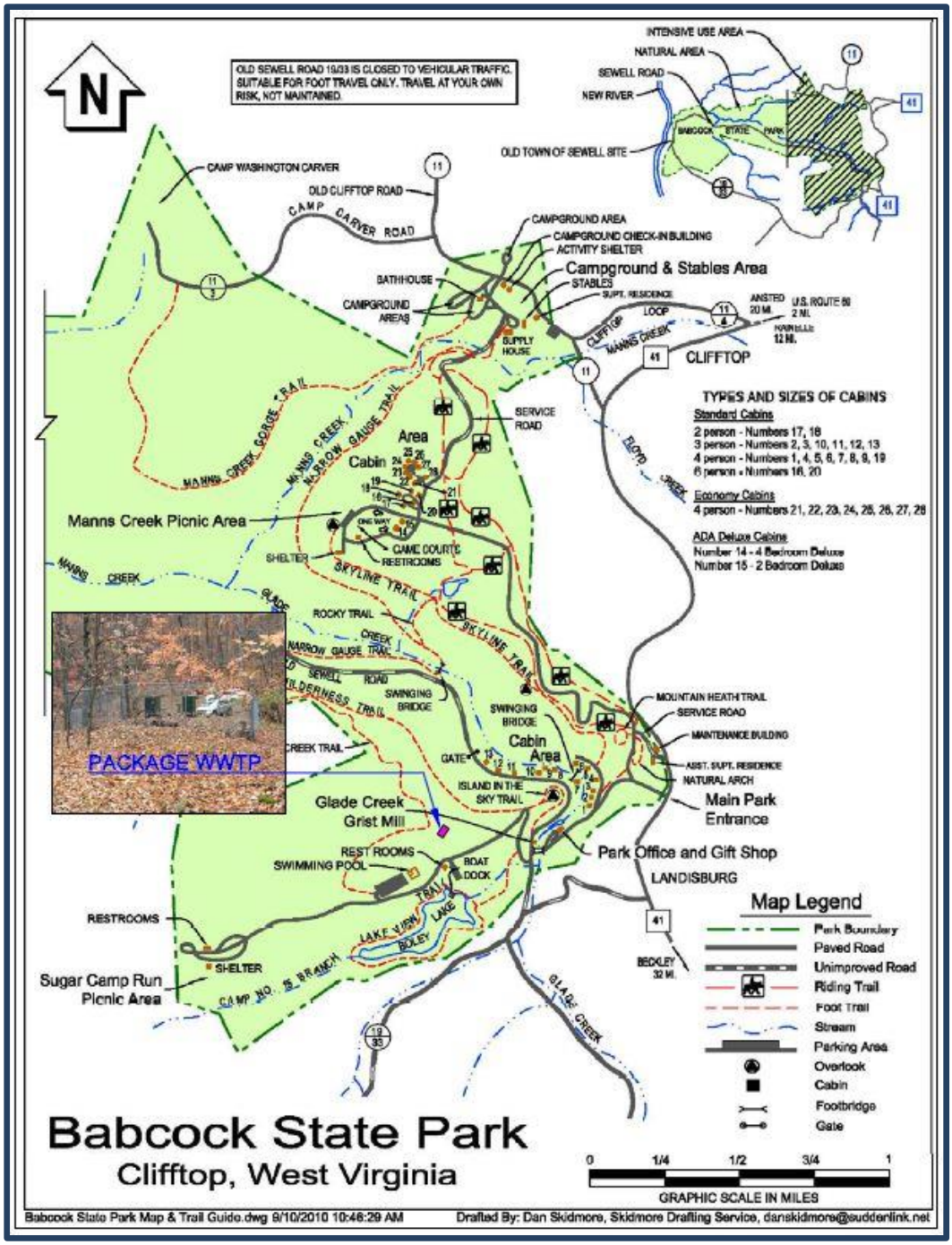


Figure 1

Babcock State Park WWTP Location

The existing package WWTP is shown in Picture 1. The AER-O-FLO model WWTP was manufactured by Clow Corp.

Picture 1

Babcock State Park WWTP

Wastewater from the pool's restrooms, the bathhouse, and from Boley Lake's restrooms, flows by gravity to the WWTP. Figure 2 provides a diagram of Babcock's WWTP. Influent from the pump station enters the bar rack and is treated aerobically in the extended aeration chamber. After clarification, treated water is disinfected by chlorination. The disinfected water then flows to a separate tank and is dechlorinated and polished before it is discharged to an unnamed tributary of Manns Creek.

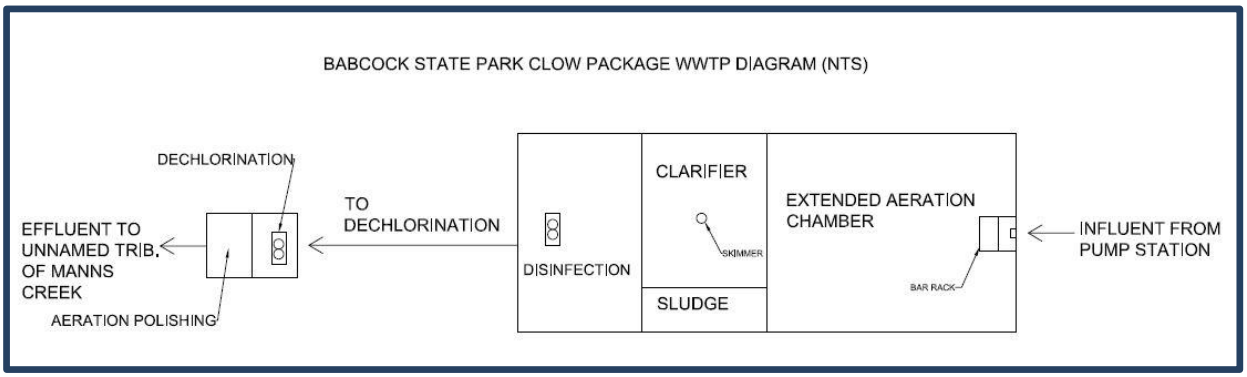


Figure 2

Babcock State Park Package WWTP Diagram

Babcock State Park Existing Conditions & Issues

During the site tour, the park superintendent discussed numerous issues with the existing WWTP. A summary of the issues is listed below.

- Low Organic Loading Rate causes erratic plant operation.
    - Flows to the WWTP are reduced 6 months of the year, i.e., the pool, restrooms, and bathhouse are closed November thru April.
        - The pool bathhouse has one shower that is rarely used.
- The original WWTP's bar rack failed due to corrosion and is temporarily repaired.
    - The current bar rack is not effectively removing trash from the influent stream.
- The WWTP's main tank & the extended aeration/dechlorinating tank are severely corroded.
- One of the two aerators has failed.
- Since the plant is not covered by a roof, daily maintenance is required to remove leaves, twigs, etc. from the top grates of the plant.
- Chlorination/dechlorinating require purchasing and handling of chemicals.

Babcock State Park Conceptual Improvements

If selected for this project, RK&K will complete a comprehensive evaluation of Babcock State Park's existing conditions and operations to identify a plan that will minimize disruption to concurrent operation of the facility. While the following paragraphs on conceptual improvements are an example of one such plan, RK&K will present other improvement options to the DNR.

During the site tour, the park superintendent noted that wastewater from other parts of the park is successfully treated with recirculating sand filters (RSF). Accordingly, RK&K performed preliminary research on RSF technology. Picture 2 shows a RSF at Babcock State Park; the park is well pleased with the performance of the system.

Picture 2

Babcock State Park Recirculating Sand Filter

Table 1 shows ways in which a recirculating sand filter would address the current issues with the park's WWTP.

Table 1

How a Recirculating Sand Filter Could Address Current Babcock WWTP Issues

Babcock's Extended Aeration Package WWTP	Recirculating Sand Filter
Low Organic Loading Rate causes erratic plant operation.	Not as susceptible to erratic operation due to low organic loading rates
Activated sludge has to be returned to the extended aeration chamber by hand, i.e., shoveling.	Operator does not recycle sludge. Primary/Septic tanks are checked for sludge/scum buildup & pumped as needed.
The main tank & the extended aeration/dechlorinating tank are severely corroded.	Tanks can be pre-cast concrete, FRP, HDPE
The aerators run during the park's quiet time causing guests to question the park's quiet time policy.	Aerators are not used. Pumps for recirculation are enclosed in the recirculation tank minimizing noise.
Chlorination/dechlorinating require purchasing and handling of chemicals.	Propose using UV disinfection to eliminate chlorination disinfection.

Assuming a 4,000 gpd flow rate at 3 gpd/sf Hydraulic Loading Rate with a typical filter length of 50 ft the required width of the filter would be 27 ft, i.e., 1,333 sf. Assuming another 1,333 sf for the primary and recirculation tanks, the total footprint of the RSF would roughly be 2,700 sf. Figure 3 shows that there is at least 4,800 SF of potential space at the existing WWTP site for a RSF. The RSF could be constructed while the bathhouses and restrooms are closed, i.e., during the winter/spring seasons to prevent disruption to park operations. Whereas the conceptual location will require removing trees, the area is located in an area of the park that would be relatively hidden from park visitors. Moreover, the outfall for the NPDES permit would remain in the same location.

Figure 3

Conceptual Location of Recirculating Sand Filter (Approximately 4,800 SF).

Droop Mountain Battlefield River State Park

High atop Droop Mountain near Mathias, West Virginia, Droop Mountain Battlefield State Park holds the honor of being West Virginia's first State Park. The park museum, artifacts, and grounds offer visitors an excellent opportunity to learn the history surrounding the Droop Mountain Civil War Battle that occurred on November 6, 1863, i.e., 152 years ago. Park amenities include an overlook, a museum displaying artifacts from the Battle, and two picnic areas.

On October 29, 2015, Daniel Tichinel, PE, RK&K had the pleasure of touring the park with Mike Smith, Park Superintendent to gather a better understanding of the park's needs for a drinking water system upgrade. As seen in Figure 4, a single well provides water to the Superintendent's residence and four water fountains - two at each of the two picnic areas.

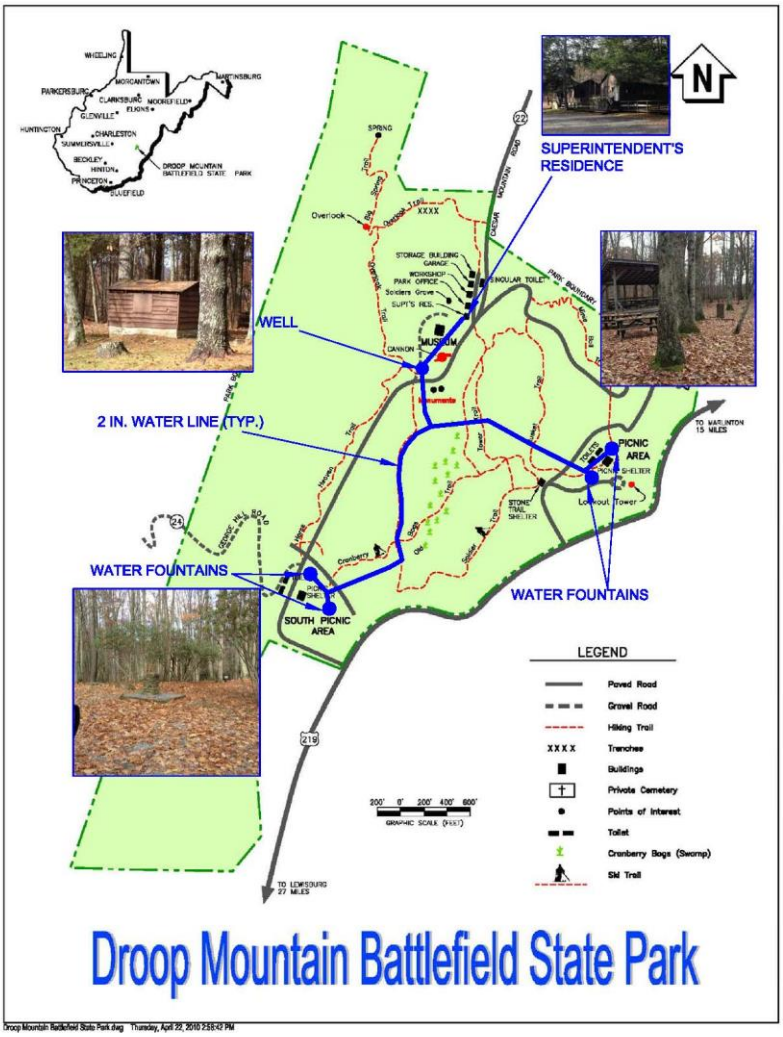


Figure 4

Map of Droop Mountian Battlefield State Park Exisiting Drinking Water System.

Droop Mountain Battlefield State Park Existing Conditions & Issues

Much of park's drinking water system was constructed in the 1930's by the Civilian Conservation Corp. The following is a list of issue and information gathered on the park's drinking water system.

Supply:

- There are numerous wells on site
    - Two conventional wells
        - Both wells are near each other, i.e., one is in the pump house and the other is next to the pump house. The pump house well was drilled in 1988 to a depth of

257-ft because the well next to the pump house did not meet operational demands and had to be abandoned.

- Park data shows that the water level in the operational well has dropped significantly since it was put in operation in 1988:
  - 1988: 180-ft of water storage
  - 2005: Sediment buildup around the pump required the pump to be replaced. The new pump had to be set at 220-ft below the ground surface. 40-ft of water storage was measured.

- It takes several days to reopen the picnic areas in the spring because the pump can only be operated for a few minutes to prevent draining the well.
- Several shallow wells
  - One at a picnic ground
  - 2 at the lookout tower
  - One at the Old Cabin 2 site

Storage:

- 100-gallon contact tank & a pressure tank.
  - At one point in time, a wooden tank was onsite, but it caught fire and was a total loss.

Disinfection:

- The park uses bleach and a 100-gallon contact tank to disinfect drinking water.

Water Lines:

- A two-inch line services both picnic area's water fountains and the Superintendent's residence.
  - Since bedrock is close to the surface, most lines are only 6-12 inches below the ground. Issues have occurred in the past with plow trucks breaking the line during the winter season.
  - The main line servicing the picnic areas is drained in October and reopened in late May or early June.
  - It takes several days to reopen the picnic areas in the spring because the pump can only be operated for a few minutes to prevent draining the well.

Droop Mountain Battlefield State Park Conceptual Improvements

If selected as engineer for this project, RK&K will complete a comprehensive evaluation of Droop Mountain Battlefield State Park's existing conditions and operations to identify a plan that will minimize disruption to concurrent operation of the facility. While the following paragraphs detail an example of one such plan, RK&K will present other improvement options to DNR.

Considering the issues the park has experienced with a decrease in well water storage levels, water line

failures, and the lack of onsite tank storage, a complete replacement of the water system is due. The conceptual improvement would consist of locating and drilling a new well, installing a storage tank to alleviate well drawdown during peak demands, and installing new water lines.

In 2006 DNR requested a hydrogeological analysis of linear features from the West Virginia Geological Survey (WVGS) to identify potential well sites within the park. As seen in Figure 5, the results of WVGS's preliminary linear analysis identified numerous potential park well sites. Moreover, 30 potential sites near the park's office were identified during the analysis. Further analysis would be required to identify the best possible well location.

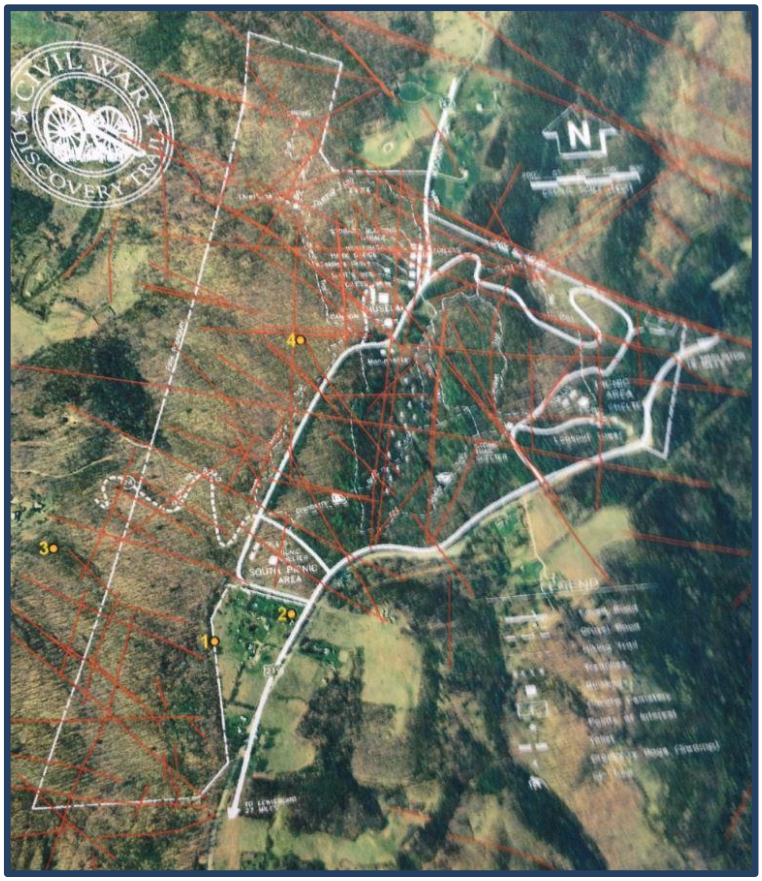


Figure 5

WVGS Hydrogeological Analysis of Droop Mountain Battlefield State Park

A conceptual water system layout is shown below in Figure 6; a storage tank could be located at the park's highest elevation, which would allow distribution to be accomplished through gravity instead of by well pressure. The installation of a storage tank would also allow for future park improvements in terms of restroom facilities at each picnic area. New lines would be installed to the park offices, Superintendent's residence, and picnic areas. Considering the park's natural beauty, the design would require a complete consideration park aesthetics and limit the amount of disturbance to the park's natural features. The construction of the system could be completed November through May to avoid disturbance to park operations.

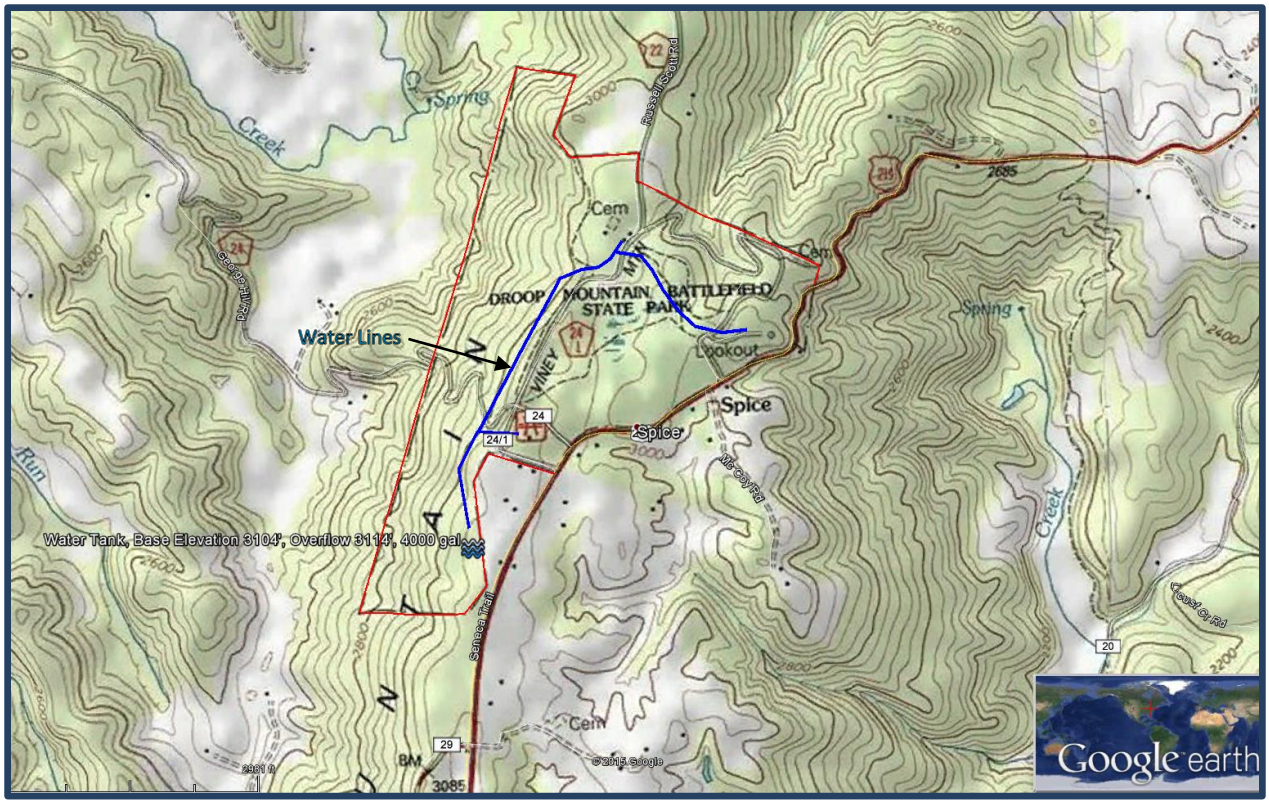


Figure 6

Conceptual Water System Layout for Droop Mountain Battlefield State Park.

PROJECT APPROACH

The overall approach to the projects will be to develop comprehensive plans and administer construction contract administration for the replacement of the extended aeration wastewater plant at Babcock State Park, and an upgrade to the deteriorated water supply system at Droop Mountain Battlefield State Park. Specifically, RK&K will approach the project as follows:

- Communication with DNR during all phases of the projects.
- Preliminary Engineering/Planning Report
  - Review RK&K's understanding of current situations with DNR, Babcock State Park, and Droop Mountain Battlefield State Parks.
  - Identify a plan with DNR and the parks to minimize disruption of the concurrent operation of the parks.
- Design
  - Complete a full design of the facilities identified during the planning phase within the agreed upon budget.

  - Construction Plans and Specifications
  - Preparation of Bidding and Contract Documents
  - Bidding Phase Assistance
  - Participation in the Evaluation of Bids Received
- Construction Contract Administration
  - Construction Management & Inspection

COMMUNICATION WITH OWNER

Upon DNR's acceptance of RK&K's Expression of Interest, RK&K will meet with the Division of Natural Resources representatives to discuss the projects and review criteria to meet DNR's goals. Communication will continue through each phase of the project by identifying a project update meeting schedule with DNR.

PLANNING

A full analysis will commence to determine a plan with the DNR and the parks to minimize disruption to current operations of the park and meet all the project objectives for example:

- Communicating with DNR from Day 1.
- Completing a full analysis of Babcock State Park's wastewater stream characteristics.
- Reviewing in detail existing plans for Babcock State Park & Droop Mountain Battlefield State Parks.
- Site topography of Babcock State Park & Droop Mountain Battlefield State Parks.
- Complete review of Babcock State Park's existing sewer infrastructure.
- Current park operations at Babcock State Park & Droop Mountain Battlefield State Parks.
- Completing a full analysis to determine peak drinking water demands at Droop Mountain Battlefield State Park.
- Identification of potential new well sites at Droop Mountain Battlefield State Park.
- Identify a project schedule for each site.

The following paragraphs detail RK&K's approach to these projects which has been proven successfully on past projects similar to the scope of work required for Babcock State Park Wastewater Treatment Plant and Droop Mountain Battlefield State Park Water System Renovation Projects.

WATER/SEWER SYSTEM REVIEW

RK&K's team will gather and review all available information including existing plans and specifications, water/sewer system records, existing reports and other information that may be available. A meeting with the WV Bureau of Public Health will also be conducted to receive their input, recommendations and a review of requirements.

After the initial discussion and reviews are completed, RK&K will meet with Division of Natural Resources officials and system operators, as appropriate, to present findings and preliminary recommendations for the projects. In addition to presenting the results of the study, RK&K will solicit input from the Division

at this or subsequent meetings. RK&K has learned that these meetings are essential to everyone's understanding of the water/sewer system's needs and the resultant proposed project. These meetings also serve to reduce or eliminate future misunderstanding of the work to be completed.

PRELIMINARY ENGINEERING/PLANNING REPORT

After the proposed improvement project is fully defined, RK&K will proceed with development of a Preliminary Engineering/Planning Report (PER). The report will include project description, project cost estimate, and funding scenarios necessary to complete the project.

As a partner with DNR, RK&K will support the project through the entire review process, including attending meetings with the review committees, and addressing any questions that may arise.

Meeting project timelines is an important part of the approval process. RK&K is committed to working with DNR to meet these requirements to deliver a successful project for the parks.

As the projects are defined and approved by DNR, RK&K will prepare construction plans and specifications as described below.

CONSTRUCTION PLANS AND SPECIFICATIONS

Upon approval of the design by DNR, RK&K will proceed with the development of construction plans and specifications. The construction plans and specifications will be prepared to support the various facets of the project. Upon completion, the plans and specifications will be combined with the bidding and contract documents necessary to advertise the project for bid. The plans will provide a detailed description of the work to be completed by the contractor while the specifications will define the method of completing the work and the materials specified.

During the development of the contract plans and specifications, RK&K will meet frequently with the District to review progress and receive input. Normally, plans for owner and regulatory agency review and comment are submitted at 50%, 90%, and 100% completion status.

Development of complete detailed plans and specifications assure completion of an effective project with minimal construction problems and change orders, which often result in additional costs.

PREPARATION OF BIDDING AND CONTRACT DOCUMENTS

With the completion of the plans and specifications, RK&K will commence preparation of the contract and bidding documents in anticipation of advertising the project for bids. This complete package will be used to define the project requirements from a contractual perspective and will assure uniformity of requirements among all contractors.

Assembly of the contract and bidding documents completes the project package. While many of these documents are determined by funding agency requirements, RK&K will use the Engineers Joint Contract Document package as the basis of the contract documents.

The Engineers Joint Contract Documents Committee (EJCDC) is an undertaking of the American Consulting Engineers Council (ACEC), the American Society of Civil Engineers (ASCE), and the National Society of Professional Engineers (NSPE). EJCDC has developed and periodically updates a set of documents representing the latest and best thinking of practicing engineers and legal counsel on contractual relations between the parties involved in construction-related projects. These documents have been endorsed and recommended by the various funding agencies in West Virginia.

The EJCDC documents are standard contract documents utilizing carefully drawn language to define the respective responsibilities of the parties with respect to construction related projects based upon "test of time" experience. These documents are the industry model for professional engineering services and construction processes. The documents spell out accepted division of duties and responsibilities of the Engineer, Owner, and Contractor, and represent the culmination of legal precedent and expert review.

Following preparation of the complete construction document package, permits must be obtained from the Department of Health, Department of Environmental Protection and other applicable entities before going to bid. All necessary right-of-ways or easements (if any) must be acquired. RK&K will prepare the permit application for the DNR's submittal as well as provide any technical assistance during the review process. RK&K is licensed to survey and prepared to assist DNR in securing easement(s) and rights-of-way should they be necessary for this project. Although these approvals are straightforward, they will take time. All of this is dependent on the source of funding for the project.

BIDDING PHASE ASSISTANCE

With approval of the DNR and the various regulatory agencies, the project can proceed to bid advertisement. RK&K normally recommends advertising a project such as this for 30 days. During that time period, RK&K will conduct a pre-bid meeting with potential bidders to review the project and answer any questions. An addendum will be issued as necessary to clarify any element of the project.

The project will be advertised for bids in accordance with State Law and Agency requirements. Projects are normally advertised in the local and regional newspapers. Advertisement in the Charleston or adjacent newspapers is also recommended in order to reach a wide audience of contractors. In addition to the newspapers, plans will be placed with Dodge Reports, West Virginia Contractors Association, and other plan rooms in the West Virginia area. The objective is to alert as many contractors as possible and increase competition towards securing a low bid for the project. A contract of this scope is normally advertised for three to four weeks to allow sufficient time for contractors to assemble prices and prepare a competitive bid.

At a specified date and time, bids will be collected at a designated location, at which time RK&K will assist West Virginia DNR in opening and reading aloud all of the bids received. The apparent low bidder will be announced at the end of the meeting.

PARTICIPATION IN THE EVALUATION OF BIDS RECEIVED

After the bids are opened, read aloud, and the apparent low bidder announced, RK&K will review the bids in detail. This review includes:

- Verifying that the math is correct.
- Verifying that all documentation required is satisfactory. Some of these requirements are initially checked at bid opening.
- Evaluation of contractors' ability to accept and satisfactorily complete the project. This could include evaluation of financial assets, current workload, previous projects, and discussion with previous clients and engineers who have worked with the contractor.

After the comprehensive review is completed, RK&K will make a recommendation to award the contract to the selected contractor.

At this stage of the project, RK&K will prepare the NOTICE OF AWARD and CONTRACT AGREEMENT to send to the contractor. After the contractor signs the contract agreement and returns it along with the payment and performance bonds and any other required documents, RK&K will issue, with the Division's approval, a Notice to Proceed. A contractor normally has ten days to start construction after receipt of this notice.

CONSTRUCTION MANAGEMENT AND INSPECTION

Once the project proceeds to construction, RK&K will monitor the construction phase of the project, acting as official representative for DNR to insure that requirements of plans and specifications are met and the project functions as designed. The construction engineer will visit the site as often as necessary, but at least bi-weekly as the project proceeds.

One of the key duties of the engineer during the construction phase will be to review shop drawings and submittals from the contractor for compliance with plans and specifications. RK&K will conduct monthly progress meetings with the contractor and DNR to review progress and to resolve any problems that may arise. RK&K will also review the contractor's pay requests to verify quantities and recommend payment for work completed.

RK&K will provide a resident project representative during the construction phase of the project. The resident inspector will provide accurate daily records of all work being performed, including quantities of materials being used on the project. The resident inspector will assure that work is being performed in compliance with plans and specifications. The resident inspector will also assess the project schedule, to make sure that upcoming work is relative to what is completed. This practice enables the prevention of potential problems before they occur making sure the appropriate people are aware of such problems as soon as possible.

At the completion of the project, RK&K will conduct a walk-through inspection with DNR and the contractor, prepare a punch list of items needing completed, and conduct a final inspection after work is completed. RK&K will also provide technical assistance during the one-year warranty period to resolve any problems that may occur. Near the end of the warranty period, RK&K will conduct a final inspection of the facility with DNR. Any problems or defects noted will be sent to the contractor for correction.

West Virginia
Division of Natural Resources
Park and Recreation Division

Babcock State Park
Wastewater Treatment Plant Replacement

Droop Mountain Battlefield State Park
Water Supply Improvements

SECTION 4

History of Projects

PAST PERFORMANCE

RK&K has historically developed long-term relationships with numerous municipal and private clients, and has consistently met or exceeded all established project milestones for past projects. RK&K has a repeat clientele rate of more than 80%. The quality of RK&K's performance is reflected in these repeat selections, as well as our ability to meet project schedules while maintaining reasonable fees. These long-term relationships were established by providing high-quality, consistent and responsive professional services. As an example, RK&K has been providing engineering services to both Frankfort Public Service District in Mineral County, WV and the Town of Lonaconing, MD since the early 1990's.

WHAT DO CLIENTS SAY ABOUT RK&K?

"The Town of Lonaconing has been working with RK&K Engineers since 1991… We sincerely appreciate their professionalism, responsiveness to our needs and the way they conduct business. They have a distinct ability to meet every challenge or deadline that they encounter. This firm is highly recommended by the Town of Lonaconing." – **Aaron C. Wilt, Town of Lonaconing**

"This is just a note to say thank you and send my personal appreciation on staying with us SO LONG in getting this project to the stage it is at now. I am not sure anyone else would of stuck so long. You guys have done a tremendous job above and beyond the call of duty. There is not enough words truly to express how I admire a company and the men who work for it to be concerned about the people along with the project. Thanks again for all your help and I am looking forward to working with you to get it to completion." – **Carol Brooks, Greater Marion Public Service District**

"The Board of Directors of the Frankfort Public Service District would like to take the opportunity to send this letter of appreciation for the exceptional service we have received from your firm. For more the last 7 years we have been actively involved with RK&K on projects totaling in excess of 50 million dollars. Our primary contact has been through Mr. David Vanscoy, your local division director, and we would like to express our appreciation for what would easily be considered service above the call of duty. Mr. Vanscoy has always been available to any of our board and employees for any issue that needs attention. Our board meetings usually include significant time and discussion on all facets of our projects…. Additionally, our dealing with RK&K includes most members of your engineering staff and field oversight people. Without exception, we could not be treated with more respect and understanding of the needs and unique problems encountered in our projects. In short, we would be very hard pressed to manage and operate our systems without the resource of RK&K's people behind us." – **Douglas Brelsford, Chairman, Frankfort Public Service District**

"RK&K was selected by the Charles Town Utility Board in 2009 to perform complete design and engineering work for both water and wastewater projects. To date, several projects have been successfully completed and several projects are in design and engineering. John Cole and other staff engineers that support the Charles Town Task Orders, continue to be dedicated to the success of all efforts of the Board." - **Jane Arnett, Utility Manager, Charles Town Utility Board**

"RK&K has raised the bar as to the quality of work the City expects from its consultants. The care, thought and attention to detail in which they apply to their proposals is carried through to project completion/construction. Each member of their team is knowledgeable in their field, collaborative and pleasant to work with. Challenges (from public comment, politics, changing regulations, etc.) are overcome through brainstorming, teamwork, pulling specialists from other RK&K offices, offering solutions/options…resulting in an improved project. This approach has been extremely helpful as the City learns to administer its own project through UCI/LAD." **Jeanette Janiczek, UCI Program Manager – City of Charlotesville, Neighborhood Development Services**

REFERENCES

The best evidence of the quality and timeliness of engineering services on RK&K's past projects is provided by those served. Therefore, WV DNR representatives are encouraged to contact any or all of the following references to confirm the quality and timeliness of RK&K's services.

CLIENT	CONTACT/ADDRESS	PHONE/E-MAIL
Charles Town Utility Board	Jane Arnett, Utilities Manager 832 South George Street Charles Town, WV 25414	Phone: 304.725.2311 jarnett@charlestownutilities.us
Town of Lonaconing	Aaron Wilt, Administrator 7 Jackson Street Lonaconing, MD 21539	Phone: 301.463.6233 aaron.wilt21539@gmail.com
Berkeley County Public Service District	Christine Thiel, PE 251 Caperton Boulevard Martinsburg, WV 25403	Phone: 304-267-4600 cthiel@berkeleywater.org
Frankfort Public Service District	Michael Bland, Administrator 150 Armstrong Street Keyser, WV 26726`	Phone: 304.788.5921 mbland@mineralcountywv.com
New Creek Water Association	Rob Riggleman PO Box 194 New Creek, WV 26743	Phone: 304.788.5886 Newcreekwater@frontier.com
Greater Marion Public Service District	Carol Brooks, Manager 44 Aberdean Drive Worthington, WV 26591	Phone: 304.287.2244 mommaredsquirrel@msn.com
District of Columbia Water & Sewer Authority	Roger Gons 5000 Overlook Avenue SW Washington, DC 20032	Phone: 202.787.2000 roger.gans@dcwater.com
Baltimore County Department of Public Works	Gerald McHenry 400 Washington Avenue Towson, MD 21204-4665	Phone: 410.887.8543 mchenry@baltimorecountymd.gov

CITY OF CHARLES TOWN ON-CALL WATER & SEWER GENERAL SERVICES

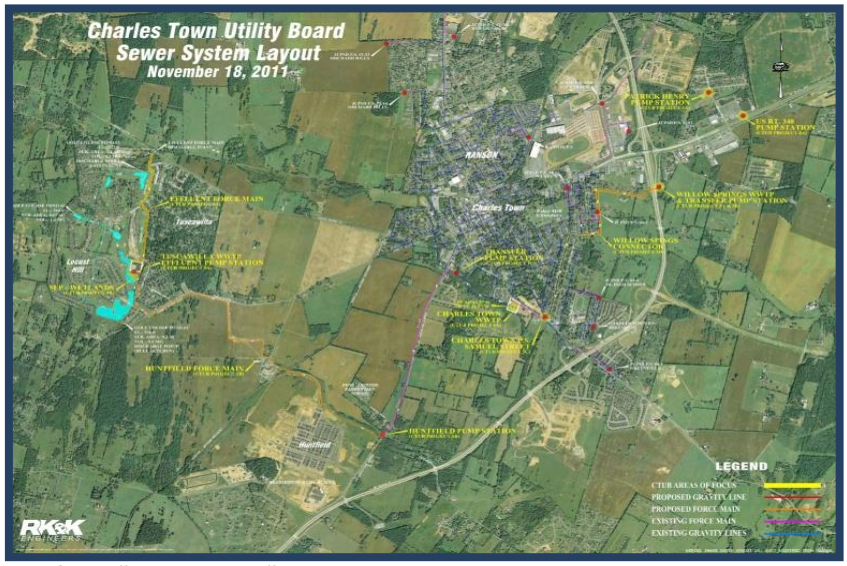
Jefferson County, West Virginia

Owner/Contact: Charles Town Utility Board
Jane Arnett, Utility Manager
832 S. George Street
Charles Town, WV 25414
jarnett@charlestownutilities.us

Cost: $2.95 Million (Fees)

Completion: Ongoing

Brief Description



In 2009, RK&K was hired by the Charles Town Utility Board (CTUB) to provide on-call engineering services for water and sewer related projects. The CTUB has been very active in implementing various water and sewer improvement projects throughout the system. Work to date for the CTUB includes the following:

Task 1 – Construction Engineering and Inspection services for overseeing the painting of two (2) elevated water storage tanks and the painting of the "pipe gallery" at the water treatment plant. Task completed.

Task 2 – GIS Inventory/Hydraulic Water Modeling of the water distribution network, and engineering design and support assistance associated with leak detection and mitigation within the water system. Task is on-going.

Task 3 – Design and Construction Engineering services for the modifications to an existing sewage pumping station and the construction of a new 8" dia. sewage force main between the existing pump station and a wastewater treatment plant. Task completed.

Task 4 – Various Engineering & Surveying services consisting of identifying an alignment for the construction of an underground electric line providing power to an elevated water storage tank; identifying alternatives for providing water and sewer service to undeveloped areas of the respective service areas; and preparation of a preliminary engineering report for providing BNR treatment capability at one of the two owned WWTPs. Task completed.

Task 5 – Construction Engineering services for reviewing and approving certified payroll from the contractor for a water meter replacement project ensuring compliance with prevailing wage rates established by the project. Task completed.

Task 6 – Plan Review Engineering services for developers building within the CTUB water and sewer service area and wishing to be connected to the system. As part of this service, RK&K reviews the construction documents to ensure compliance with CTUB's design requirements and determining the available infrastructure. Task is on-going.

Task 6V – Engineering assistance with the evaluation of the Utility's Willow Spring WWTP which is exceeding the NPDES permitted discharge on metals; addressing odor and noise issues being experienced at the Utility's Tuscawilla WWTP; registration of all the aboveground storage tanks in accordance with WV Senate Bill 373; preparation of an updated sewer strategic plan; assistance with the preparation of a source water assessment and protection plan. Task is on-going.

Task 7 – Design and Construction Engineering services for a 900-gpm effluent pump station and 8" dia. force main as part of a wastewater treatment plant upgrade project. The project reached substantial completion in March 2015. Task is on-going.

Task 8 – Construction Engineering services for reviewing and approving certified payroll from the contractor/subcontractors upgrading the Tuscawilla wastewater treatment plant project ensuring compliance with prevailing wage rates established by the project. Task completed.

Task 9 – Design and Construction Engineering services for the construction of a scalping sewage pump station to divert a portion of sewage flow to another treatment plant for treatment. Task completed.

Task 10 – Design and Construction Engineering services to create a wetland adjacent to the Tuscawilla wastewater treatment plant. The wetland creation is part of a consent decree with the DEP for creation of a supplemental environmental project. Task on-going with construction scheduled for summer of 2015.

Task 11 – Design and Construction Engineering services for addition of emergency back-up generators at the water treatment plant and raw water intake pumping station. Task completed.

Task 12 - The CTUB has been very active in implementing various sewer improvement projects in accordance with their strategic plan. Upcoming design and construction engineering projects include the design of a new scalping pump station adjacent to a third WWTP, upgrades to three (3) existing sewage lift stations, construction of a new 10" dia. gravity sewer line, and upgrades to the existing Charles Town WWTP bringing the treatment plant into BNR compliance. Task is on-going.

Task 13 – Engineering services for overseeing the painting of the 500,000 gallon Avis Street Water Storage Tank. Task completed.

Task 14A – Design and Construction Engineering services for the construction of approximately 12,300 LF of 12" water main between the water treatment plant and a 500,000 gallon water storage tank. Task is on-going with construction to commence fall of 2015.

Task 14B – Design and Construction Engineering services for the replacement of approximately 8,000 LF of 2", 6 & 8" water mains along Jefferson Avenue. The existing water mains are undersized and experiencing water loss and low pressures. Task is on-going with construction to commence fall of 2015.

Task 15 – Design and Construction Engineering services for expanding the flocculation and sedimentation basin at the water treatment plant for bringing the water treatment plant into compliance with State Health Department requirements. Task will also include the construction of a 1 MG water storage tank to meet the new SB 373 regulatory requirements. Task is on-going with construction to commence fall of 2015.

Task 16 – Engineering assistance with the evaluation of an adjacent public sewer utility that CTUB desires to purchase a portion of their sewer collection system. Task is on-going.

Task 17 – Engineering assistance with improvement of the performance of the Tuscawilla WWTP. Since 2013 construction the wastewater treatment plant, the plant has experience operation and permitting issue. Task is on-going.

Task 18 – Design and Construction Engineering services for overseeing the installation of a system wide water SCADA monitoring system that will monitor all of the water storage tanks, booster station and water treatment plant in an effort to improve the overall performance of the water system; painting of an elevated water storage tank; installation of a mixing system within a WST; and the demolition of a decommissioned WST. Task is on-going with construction to commence fall of 2015.

VA MEDICAL CENTER
WATER & SEWER DEFICIENCIES CORRECTION
Martinsburg, West Virginia

Owner/Contact: Department of Veterans Affairs
Semper Fi Contracting, LLC, Sebastian Roman, President
703.327.6047

Cost: $0.9 Million

Completion: 2013

Brief Description

The Department of Veterans Affairs solicited a request for proposals for major improvements to the water and sewer system at the VA Medical Center in Martinsburg, West Virginia on March 13, 2012. The scope of work involves new and replacement water and sewer lines, removal and reclamation of existing abandoned water and sewer infrastructure and rehabilitation or replacement of existing sewer collection system.

As subcontractor to Semper Fi Contracting, LLC, RK&K serves as Engineer of Record on this $0.9 Million design-build project.

RK&K provided the technical proposal submittal, field survey and design for this design-build project. The project consists of corrections to the water and sewer utilities deficiencies on the west side of the VA Medical Center.

A Notice to proceed was issued to Semper Fi Contracting, LLC on June 13, 2012, with completion scheduled for March 20, 2013.

RK&K's design encompasses the complete replacement of selected potable water supply lines to be relocated to facilitate new expansion; and sanitary sewer distribution lines serving the existing buildings and buildings proposed for the west side of the main hospital building. The existing water and sewer services are deficient and lack peak capacity requirements.

The water line consisted of 1,100 LF of 10" Ductile Iron Pipe. The new sewer line consisted of 1,300 LF of 8" PVC with manholes.

WILEY FORD WATER LINE REPLACEMENT

Wiley Ford, Mineral County, West Virginia

Owner/Contact: Frankfort Public Service District
Michael Bland
150 Armstrong Street
Keyser, WV 26726
mbland@mineralcountywv.com

Cost: $5.1 Million (Fees)

Completion: 2013

Brief Description

Wiley Ford, a community of 1,078 residents, is located on the West Virginia side of the Potomac River opposite Cumberland, Maryland. Evolving from early 18th century development, the community's growth accelerated in 1913 when the Homestead Development Corporation laid out 596 lots as the Wiley Ford Addition to the City of Cumberland. Further growth resulted from construction of the Potomac Highlands Regional Airport contiguous to the Wiley Ford community.

The existing private water system contains mostly small lines – 2" galvanized or less. 80% of the lines are 2" and in poor condition. As a result, there are pressure and volume problems within the system, particularly at the higher elevations. The system had minimal fire protection available.

Frankfort Public Service District purchased this system and immediately started a project to completely replace and expand the system to the adjacent area.

A $400,000 project extension to Potomac Highland Regional Airport and the Community of Swan Pond was constructed with monies available from a bid under-run.

The distribution system consisted of water line replacement and expans ion including 14,195 LF of 8" water mains; 28,870 LF of 6" water mains; 12,255 LF of 2" water mains; 9,975 LF of ¾" water services; 54 fire hydrants; and 400 radio read meter services.

To replace the existing water being supplied by Cumberland, MD at extremely high cost, Frankfort Public Service District chose to develop a well source. A 700' deep well was constructed furnishing 100 gpm. The water is pumped through treatment for chlorination and fluoridation into system storage tank.

A 300,000 gallon water storage tank, and a telemetry system were installed at the same elevation as Frankfort PSD existing Sherwood Acre tank allowing for the interconnection of the two systems.

As part of RK&K's services, we assisted FPSD in securing funding-loans and grants utilizing the cost savings realized by producing their water instead of purchasing it. As a result, FPSD was able to complete the project without raising rates.

THAYERVILLE WATER SYSTEM

Garrett County, Maryland

Owner/Contact: Garrett County Department of Public Works
Patrick Hudnall
2008 Maryland Highway, Suite 2
Mountain Lake Park, MD 21550
phudnall@garrettcounty.org

Cost: $4.5 Million

Completion: 2013

Brief Description

In 2010, the Garrett County Department of Public Utilities retained RK&K's design services to design a water system to serve the residents and commercial development along the U.S. 219 and Glendale Road Corridors within Thayerville, including residents within the Mountainside Development. Water to the existing customer base is provided by individual and small system wells, most of which suffer from poor water quality and quantity. The proposed project consisted of constructing a water treatment facility, distribution system, two (2) water booster stations and two (2) water storage tanks. This project was a high priority for the County and as such, the engineering contract design time was limited to 160-days to provide the County with the necessary documents to advertise the project for construction, less regulatory agencies permit approval.

Treatment Plant - As part of the project, a 600 gpm water treatment facility was constructed adjacent to two (2) 300 gpm wells that the Garrett County Department of Public Utilities previously drilled. Treatment consisted of chlorination of the well water. The treatment facility consisted of two (2) parallel 300 gpm chlorine contact chambers flowing into a high service clear well. Limited space for the treatment facility resulted in a two level structure. The lower level, below grade, housed the chlorine contact chamber and high service pumps while the upper level contained house controls, a small lab, a chlorine room, and a restroom. Location of the treatment facility, adjacent to Deep Creek Lake also dictated aesthetically pleasing façade on the exterior of the structure to blend in with the surrounding buildings.

Booster Stations and Water Storage - Due to the topographic layout of the area and to minimize excessive system pressures, while minimizing the number of pressure reducing valves (PRV's), the system will consist of three (3) pressure zones. The lowest zone (Zone 1) will served the customers below an elevation of 2710' while the second zone (Zone 2) will serve customers between elevations 2710' and 2918'. The upper most zone (Zone 3) will serve the customers above the 2918' elevation. Water storage for Zone 1 is a 1 MG water concrete storage tank while water storage for Zones 2 and 3 consists of a 165,000 gallon concrete water storage tank. Even though water from Zone 3 will be supplied from a water storage tank, system pressures will be dependent upon a booster pump.

Distribution System -The distribution system consists of 2" through 12" diameter pipe. Customers within Zones 1 and 2 will have fire protection while the customers within Zone 3 will have to rely on the proximity of Zone 2 for fire protection. The system was designed for future expansion around the lake.

TOWN OF LONACONING WATER SYSTEM

Allegany County, Maryland

Owner/Contact: Town of Lonaconing
Aaron Wilt, Administrator
7 Jackson Street
Lonaconing, MD 21539
aaron.wilt21539@gmail.com

Cost: $3.0 Million

Completion: Ongoing

Brief Description

Initial Design of Three Package Water Treatment Plants

RK&K was responsible for the planning, design and construction management for three package water treatment plants to serve three small communities in Allegany County.

Engineering Services:

The project included identification of suitable locations for the proposed water treatment plants, determination of the capacity of each of the proposed ground water storage tanks for installation on the site of each water treatment facility and evaluation of system hydraulics. Each of the four 100-gpm package water treatment plants included a finished groundwater storage tank and backwash waste holding tank. The Midland-Gilmore plant has a 500,000-gallon tank, Koontz Run has a 300,000-gallon tank and Charlestown has a 200,000-gallon tank. Storage tanks supply potable water to the Lonaconing water distribution system which provides water for filter backwash and for the plant water system. The backwash waste holding tanks are used to remove and concentrate the waste solids using sedimentation. In conjunction with the water treatment plant project, 10,000 linear feet of 10" raw water main was rehabilitated and/or replaced and 14,000 linear feet of 8" finished water main was installed.

Additional Projects Completed:

Since the completion of the water plants and storage tank, RK&K has provided services including design engineering, permitting, cost estimating, construction engineering and project representative inspection on the following additional projects:

Phase I, II, III, and IV and Warnick Road - These projects replaced nearly 40,000 LF of water main in Lonaconing, Maryland area and included a booster pump station and 10,000 gallon water storage tank. The projects were completed in 2009.

Buskirk Hollow and Miller Road - Contract was awarded in May 2008 for $930,800 to provide potable water or replace existing old lines to 47 customers. The project was completed $81,000 under budget in December 2008 with 8,800 LF of main line and 9 fire hydrants installed involving 3 stream crossings.

Mill Run Water Line Extension - In 2007, Town of Lonaconing enlisted RK&K to design a water distribution system to service the Mill Run Community located south of Barton, Maryland. Design was completed and contract awarded in July 2008 for $1.297 million to provide potable water to 54 customers. The project included over 15,000 LF of water line, a railroad bore, 9 stream crossings, and 8 fire hydrants. The project was completed in August 2009 at $80,000 under budget.

Town of Midland – RK&K completed design for project to replace old remaining water lines, valves, meters and hydrants in the Town of Midland, Maryland in 2008. The project was awarded in October 2008 for $1.226 Million funded by USDA Rural Utility Services and Maryland Department of Environment. Construction commenced in November 2008, with RK&K providing construction representative services, and was completed in November 2009 at a cost of $1.094 Million - $132,000 under budget. Items installed include 7,600 LF of mainline, 100 meter upgrades to radio read, 4 fire hydrants, and 3 stream crossings.

Town of Barton – RK&K designed a project to replace and upgrade water distribution and service system in the Town of Barton, Maryland. The project was awarded in March 2010 for $1.876 Million funded by USDA, Rural Utility Services and Maryland Department of Environment. Construction commenced in April 2010 with RK&K providing construction representative services and was completed in June 2011, at a cost of $1.674 Million – 202,000 under budget. Items installed include 17,000 LF of mainline, 486 meter upgrades to radio read, and 16 fire hydrants.

Charlestown Road Waterline Extension – Design of a waterline extension project to extend potable water service to 15 residential sites in the Town of Lonaconing was completed by RK&K and awarded in March 2011 for $458,700, funded by Maryland Department of Environment, Bureau of Mines. Construction commenced in April 2011 with RK&K providing construction representative services and was completed in September 2011 at cost of $434,900 - $23,800 under budget. Items installed include a 25,000 gallon steel underground water storage tank, booster pump station, 3,040 LF of mainline, 16 meter assemblies, and 3 FH.

Emergency Generator Installation – RK&K completed design of Emergency Generator Installation for Charlestown, Koontz, and Midland-Gilmore Water Treatment Plants with contract being awarded in February 2012 for $166,300 funded by Community Development Block Grant. Construction commenced in March 2012 with RK&K providing construction representative services and was completed in June 2012 at cost of $166,300 – on budget. Items installed include 2 – 60 KW and 1 – 100 KW generators with concrete pad and automatic transfer switch.

Water Meter and Control Valve Replacement – RK&K completed design to replace 370 meters with radio read meters and replace 25 meter assemblies throughout Lonaconing Water Company service area as well as replacement of pressure reducing valves at Koontz, Meadow and Middle School stations. The project was awarded in July 2012, for $252,600 funded by USDA, Rural Utility Services. Construction commenced in August 2012. RK&K provided construction management and inspection services. Construction was completed in January 2013.

SCADA System – In September 2012, RK&K completed design of a complete SCADA system for Lonaconing Water Company, including SCADA equipment at water treatment plants, water storage tanks, water pump stations and Town Hall. Funding was by USDA, Rural Utilities Services. Construction was complete July 2014.

Midland Water Tank – Charlestown Water Tank Roof Replacement – Reservoir Fencing – In September 2012, RK&K completed design of a 483,000 gallon water tank to assure adequate water availability to residences as well as fire protection for the Town of Midland, a roof replacement for Charlestown Water Tank, and fencing for two reservoirs. The project was funded by USDA, Rural Utility Services with construction completed August 2013..

Koontz Run Reservoir Water Storage Tank and Weir – RK&K provided design and contract preparation for construction of a 3.0 million gallon pre-stressed concrete raw water storage tank; concrete weir and impoundment, necessary connecting water lines, removal of existing Koontz Dam and Reservoir, and restoration of Koontz Run through old reservoir area. The project was funded by USDA, Rural Utility Services and Maryland Department of Environment. RK&K provided construction engineering and inspection. Construction was complete in 2014.

GREATER MARION PUBLIC SERVICE DISTRICT
CAROLINA & IDAMA SEWER SYSTEM REPLACEMENT PROJECT

Marion County, West Virginia

Owner/Contact: Greater Marion Public Service District
Carol Brooks, Office Manager
44 Aberdean Drive
Worthington, WV 26591
mommaredsquirrel@msn.com

Cost: $5.7 Million

Completion: Ongoing

Brief Description

In November 2005, the Greater Marion Public Service District (GMPSD) retained Rummel, Klepper & Kahl, LLP (RK&K) as their engineering consultant to perform a study of their sewer collection system; focusing on the collection systems within the Communities of Carolina and Idamay. The study consisted of evaluating the vacuum collection system that was constructed in 2000, which replaced an older gravity collection system and eliminated two (2) individual treatment facilities. The vacuum collection system connected the Communities of Carolina and Idamay to the Town of Worthington's Vacuum Station via a line extension stopping near the intersection of WV Route 218 and County Route 52 (Carolina Road). The Community of Kellytown also connected their 25 customers to the Idamay branch of the Greater Marion PSD vacuum system.

The Communities served by the GMPSD have long suffered from the inability of the vacuum sewer system to function properly since construction. RK&K has reviewed the existing reports and data made available as well as conducted field inspections as part of our efforts to develop recommendations for system corrections. Through various reports presented to the GMPSD, Marion County Commission, Class Action Lawsuit Representatives and the WV Department of Environmental Protection (DEP), RK&K has recommended measures and alternate collection and conveyance options that will potentially provide some relief to the troubled system.

The overall improvements will consist of the construction of a new gravity sewer collection system within the two Communities replacing/modifying the existing failing vacuum system and the construction of two sewage lift stations, one within each Community. The new gravity collection will flow to one of the two sewage lift stations. Sewage collected within the Community of Idamay will be pumped to the Community of Carolina. The Carolina P.S. will convey both the sewage generated within Carolina and that pumped over from Idamay to the Town of Worthington WWTP for treatment. Construction is schedule for spring 2013 with a one year construction timeline.

POTOMAC RIVER RAW WATER INTAKE AND PUMPING STATION

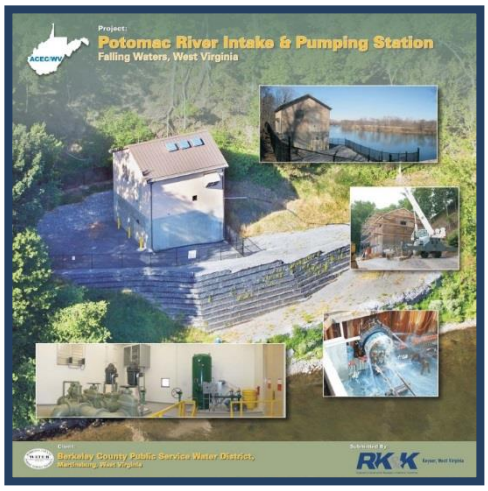
Berkeley County, West Virginia

Owner/Contact: Berkeley County Public Service District
Christine Thiel, PE
251 Caperton Boulevard
Martinsburg, WV 25403

Cost: $663,642.00

Completion: Complete: 2009

Brief Description



RK&K performed design, construction management and inspections services for the pumping station construction. This included maintaining all project records, answering requests for information, reviewing change orders and submittals, schedule review, and maintaining all quality control requirements for new construct ion, including the demolition of the existing station. The RK&K on-site inspector served as liaison for the contractor, owner, and design engineer.

Berkeley County Public Water Service District expanded the capacity of its facilities with a number of projects for a new pumping station and raw water intake located on the Potomac River near Falling Waters, West Virginia.

For this project, a new deep well pumping station and submerged raw water intake replaced an existing intake and pumping station. The pumping station had an initial capacity of 4 mgd, but was expanded to provide a future capacity of 12 mgd. By extending the submerged intake to a location further from shore and into deeper water, the pumping facility is expected to operate more reliably during cold weather periods.

A submerged intake conveys water to the pumping station where 150-HP vertical turbine pumps pump the water to the treatment facility via an existing raw water transmission main. The dual 30-inch intake pipes we reinstalled under the Potomac River using micro-tunneling methods. The new pumping station included facilities for future pretreatment chemical addition as well as allowed for zebra mussel control. The current pumping station was demolished as part of the project.

This project received the 2009 Silver Award for WV Engineering Excellence from the American Council of Engineering Companies (ACEC) of West Virginia.

Role: Prime, pumping station design, construction management and inspection.

WILEY FORD SEWER PROJECT

Mineral County, West Virginia

Owner/Contact: Frankfort Public Service District
Michael Bland
150 Armstong Street
Keyser, WV 26726
mbland@mineralcountywv.com

Cost: $4 Million

Completion: 2001

Brief Description

The community of Wiley Ford is located in the northern end of Mineral County, West Virginia, and is separated from Cumberland, Maryland by the North Branch of the Potomac River. In the 1940's, a collection system and large septic tank served about 20% of the residents. Over the years, this tank has failed and the discharge went directly into the Potomac River. The remainder of the community was served by individual septic tanks, many of which were failing. Frankfort Public Service District developed a project to address the needs of this community. The project was funded by a combination of a West Virginia Infrastructure Loan and Grant, State Revolving Loan and Hardship Grant and Small Cities Block Grant.

Engineering Services: Vanscoy Engineering and Surveying (now RK&K) was selected in 1996 by Frankfort Public Service District to provide the design, contract plans and specifications and construction phase engineering and inspection services for the new Wiley Ford Sewer System. The proposed project provides wastewater collection services for over 450 resident and commercial customers within the community of Wiley Ford.

The topography of Wiley Ford had three separate areas that were collected via conventional gravity sewer. Two of these areas flowed into 25 HP Duplex 160-gpm pump stations. The wastewater was then pumped into the third collection area and flowed by gravity to the third pump station. This duplex pump station pumped the wastewater via a force main under the North Branch of the Potomac River and the C&O Canal to the City of Cumberland for treatment in their wastewater treatment plant.

The collection system consists of over 57,000 feet of collector lines, 6,700 feet of force main and nearly 11,000 feet of service laterals. The system also contains 285 manholes and 51 cleanouts. The estimated construction cost for this project was $4,121,886.00; however, when bids were opened on March 28, 2000, the total of the two contract low bids was $2,944,829.00, which was $1,177.057.00 under the engineer's estimate for the project.

Substantial completion of the collection system and pump stations was issued in May 2001. Once the system was operative, RK&K conducted a Town meeting to instruct the citizens on procedures and methods required for their connection to the system and proper abandonment of septic tanks.

CITY OF CHARLES TOWN ON-CALL WATER & SEWER GENERAL SERVICES IMPROVEMENTS TO THE CHARLES TOWN WATER TREATMENT PLANT

Jefferson County, West Virginia

Owner/Contact: Charles Town Utility Board
Jane Arnett, Utility Manager
832 S. George Street
Charles Town, WV 25414
jarnett@charlestownutilities.us

Cost: $200,000 (Fee)

Completion: 2015

Brief Description

Under and on-call engineering services contract for water and sewer related projects, RK&K has provided engineering and construction phase services to implement various improvements to the Charles Town Water Treatment Plant (CTWTP). The CTWTP is a 2.8 mgd conventional treatment plant that includes the following unit processes:

- Raw water intake & pumping
- Rapid Mix
- Chemical Feed
- Coagulation, flocculation, sedimentation,
- Sand filtration, and
- High service pumping

RK&K provided design and construction engineering services for the addition of emergency back-up generators at the water treatment plant and raw water intake pumping station and also expanding the flocculation and sedimentation basin for bringing the water treatment plant into compliance with State Health Department requirements. RK&K designed new facilities to increase the settling time and expanding the chlorine contact time as well as incorporating new high service pumps into the overall process.

Specifically, this project included the following improvements:

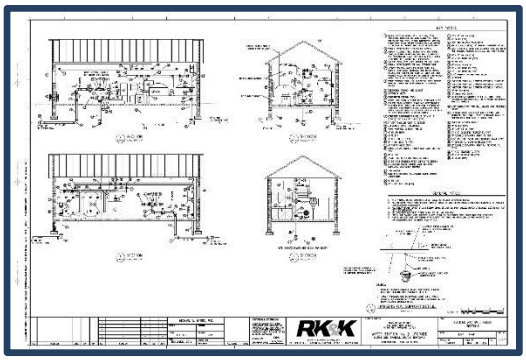
- ✓ The construction of a new flocculation and settling basin meeting State Health Department requirements.
- ✓ The construction of additional chlorine contact tankage for meeting State Health Department requirements.
- ✓ The replacement of the existing high service pumps with new pumps for transferring water from the existing chlorine contact tank to the new chlorine contact tank.
- ✓ The construction of a new high service booster pump station adjacent to the new chlorine contact tank.

ON-CALL GENERAL ENGINEERING SERVICES
TOWN OF MOUNT AIRY WATER STATION NO 2
Mount Airy, Maryland

Owner/Contact: Town of Mount Airy
Bernard Quinn
110 S. Main Street
Mount Airy, MD 21771
bquinn@mountairymd.org

Completion: Ongoing

Brief Description:



Under an on-call general engineering services contract with the Town of Mt. Airy, RK&K provided design services and prepared contract documents for the replacement of the Town's existing Water Station No. 2 located in the vicinity of Cottonwood Avenue and MD. Rte 27.

Water Station No. 2 is currently supplied from two wells having an existing nominal capacity of approximately 200,000 gallons per day (gpd). The Town desires to repl ace the existing Water Station No. 2 due to the condition and age of the existing facility and the desire to expand the treatment capacity to 350,000 gpd. The proposed work includes construction of a new treatment facility which includes the following major treatment process.

- Chemical storage and feed equipment for:
  - Sodium Hypochlorite (NaOCl) for disinfection and distribution system residual
  - Sodium Fluoride (NaF)
  - Sodium Hydroxide (NaOH) (Caustic Soda) for pH control
- Ion exchange for Nitrate removal
- Ion exchange for softening

In addition, the new facility will include VFD controlled High Service Pumping, operator station and laboratory, emergency diesel backup generator, improved site access and security, and automated control and remote monitoring.

One of the major challenges of this project was the need to construct the new facilities within the existing small site footprint while keeping the existing facility in service during construction.

The existing treatment building will be demolished after the new treatment building is constructed and operational. Because the existing WS#2 houses Well #5, a new well house enclosure will be constructed over Well #5 after demolition of the treatment building.

GIBSON ISLAND WATER TREATMENT PLANT UPGRADES

Anne Arundel County, Maryland

Owner/Contact: Anne Arundel County Department of Public Works
Bruce Wright
2660 Riva Road, Third Floor
Annapolis, MD 21401
bwright@aacounty.org

Cost: $127,000 (Fee)

Completion: 2011

Brief Description:

The Gibson Island Water Treatment Plant (WTP) was originally constructed in the early 1950's to supply drinking water to the inhabitants of Gibson Island. Since its original construction, the plant has undergone only one major upgrade in the late 1970's to increase treatment capacity and install a new filter and control building. Today, the Gibson Island WTP has a treatment capacity of 0.3 mgd which appears sufficient to meet maximum day demands within the foreseeable future.

The Gibson Island WTP consists of two deep ground water wells, aeration, chemical addition, mixing and sedimentation, followed by filtration through greensand pressure filters. In addition, there are onsite facilities for handling and storage of removed solids. The function of the WTP is to oxidize and remove high levels of iron and manganese to within secondary maximum contaminant levels (MCLs) as established by EPA.

The Gibson Island WTP experienced occasional iron breakthrough on the filters on high flow days. It is anticipated that these breakthrough events are likely the result of poor filter performance combined with inefficient filter backwash cycles.

In addition to replacing the media inside each filter, the following upgrades were performed as part of this project:

- Replace the high service pumps and filter control piping to improve hydraulics and automate backwash cycles.
- Demolish the existing chemical feed building and provide a new building at or near the same location.
- Evaluate and design structural repairs to Sedimentation Basins 1 & 2 and the Decant Pump Station.
- Provide backup power generation through the installation of either permanent or mobile diesel generator.
- Provide plant electrical improvements including a new MCC.
- Evaluate and install new instrumentation and control equipment.
- Repair and stop ongoing erosion on the hill behind Sedimentation Basin #2 and leveling the ground in this area to allow improved access around the structure.
- Paint the entire facility for both aesthetics and corrosion control.

NORTHERN MINERAL COUNTY REGIONAL SEWER SYSTEM PHASE I – WWTP

Mineral County, West Virginia

Owner/Contact: Frankfort Public Service District
Michael Bland
150 Armstrong Street
Keyser, WV 26726
mbland@mineralcounty

Cost: $14.7 Million

Completion: 2012

Brief Description:

During the design of the regional project, the District submitted a plan which included the entire regional sewer system consisting of a 1.2 mgd wastewater treatment plant, 63 miles of sewer lines (6" through 21" diameter) and 14 sewage lift stations divided into nine sewer sheds and covering 35 square miles, and the elimination of fourteen (14) wastewater treatment facilities. It was recognized early in the design that obtaining the necessary grant funding amount while maintaining affordable user rates within any one given fiscal year would be problematic. The recommendation was made to divide the entire project into multiple phases whereby increasing the possibility of securing the necessary grant funding for construction. The resulting 1st phase allowed for the construction of approximately 13 miles of interceptor sewer lines (8" through 21" diameter), one (1) remote sewage pump station, and the construction of a 0.6 mgd regional wastewater treatment plant. The total population served by this phase of the project is nearly 7,500 persons, representing approximately twenty-five percent (25%) of the County residents.

Significant challenges in permitting, funding, design and construction were overcome providing a cost effective treatment method to meet the State's nutrient loading limitations as well as minimizing the impact to the surrounding area and financial burden on the District's customers. To accomplish the level of treatment to meet the State's nutrient limitations, the Sequencing Batch Reactor (SBR) biological treatment process was utilized as the primary means of treatment, incorporating both chemical addition to enhance the nitrification process and filtration to enhance phosphorus removal. This design resulted in the District's plant being the first treatment facility specifically designed, constructed, and placed into successful operation within the State of West Virginia addressing the State's limitations on nutrient loadings (5 mg/L of TN and 0.5 mg/L of TP) entering the Chesapeake Bay. As a result of this design, the District's project was recognized by the WVACEC receiving the 2011 Silver Award for Engineering Excellence.

The treatment plant process consists of an influent pumping station, rotating mechanical fine screen, vortex grit removal, SBR's, continuous backwash upflow sand filters, UV disinfection, cascade aeration, aerobic digestion, and belt-filter-press. In addition to the plant's process components a operations building complete with testing laboratory was also construction as well as a maintenance garage and chemical storage facilities. Despite challenging site conditions, the wastewater treatment plant was operational in June 2011 (15 months after notice to proceed).

VINT HILL FARM STATION WASTEWATER TREATMENT PLANT STUDY AND DESIGN

Warrenton, Virginia

Owner/Contact: Fauquire County Water & Sanitation Authority
Barney E. Durrett, Jr.
7172 Kenedy Road
Warrenton, VA 20187
durrett@infi.net

Cost: $11 Million

Completion: 2011

Brief Description:

The Vint Hill Farms Station (VHFS) is located in the north-northeast portion of Fauquier County, Virginia, approximately 40 miles west of Washington, D.C. and 11 miles east of Warrenton, Virginia. The installation served as a base for regular military personnel and was converted to civilian use. The water and sewer systems are owned and operated by the Fauquier County Water and Sewer Authority.

RK&K completed the design and construction phase services for a new sequencing batch reactor (SBR) treatment system to replace existing trickling filters. The system is designed for a 0.6-mgd average daily flow capacity. Downstream filters were provided and can be operated as denitrification filters. The treatment system was designed to meet 5 mg/l TN and 0.5 mg/l TP.

Liquid treatment is accomplished generally using screening, grit removal, SBRs, post-SBR equalization, phosphorus precipitation using alum, UV disinfection, and cascade post aeration. Chemical feed systems include methanol, hypochlorite and alum. The filters are designed to operate as denitrification filters if required in the future. Solids processing will be accomplished generally using aerobic digestion to achieve Class B biosolids, belt filter press dewatering, and temporary storage of dewatered cake prior to hauling off-site. An effluent pumping station is required to divert the plant discharge to Kettle Run. The SBR, post-equalization, and equipment room were designed into a single monolithic structure for cost savings and to reduce the structure footprint. Pre-cast, post-tensioned concrete construction was used for the SBR structure. Deep bed, continuous back wash filters were provided.

The SBR system began operation in Fall of 2007 and construction of the facility is complete. The effluent goals of the facility are being met.

In the Fall of 2007, the Authority contracted with RK&K to provide design services for an expansion of the SBR facility to 0.95 mgd and to upgrade the system to provide effluent quality meeting 3 mg/l total nitrogen and 0.3 mg/l total phosphorus. The facility was expanded and construction was completed in 2010.

MARSHALL WASTEWATER TREATMENT PLANT BNR UGGRADES

Fauquire County, Virginia

Owner/Contact: Fauquier County Water & Sanitation Authority
Barney E. Durrett, Jr.
7172 Kenedy Road
Warrenton, VA 20187
durrett@infi.net

Cost: $236,000

Completion: 2009

Brief Description

RK&K provided study and design services for a nutrient removal upgrade of the 0.64-mgd wastewater treatment facility. The upgrade was completed to reduce the effluent nutrient concentrations to meet the waste load allocations established by the Virginia Department of Environmental Quality (VDEQ). The existing plant provided carbonaceous removal and nitrification and is cu rrently treating approximately 0.24 mgd. A 2004 upgrade provided a new headworks facility, diffusers in the existing reactors, clarifiers and ultraviolet radiation disinfection systems. The reactors are constructed of aged steel tanks that were not replaced during the previous upgrade. An aged belt filter press is used to dewater waste activated sludge.

Initially, RK&K developed a Preliminary Engineering Report (PER) which included an evaluation of three replacement treatment systems each designed to provide treatment for an effluent quality of 4 mg/l total nitrogen and 0.3 mg/l total phosphorus. An evaluation of sequencing batch reactors, the Schreiber counter-current process system, and continued use of the existing nitrification reactors followed by new denitrification filters was included. The PER recommended the existing reactors be replaced with the Schreiber system and new deep-bed sand filters be provided. New chemical facilities, aerobic digesters, and replacement dewatering equipment were also included.

Based on the cost projections included in the PER and budget and funding issues, the Fauquier County Water and Sanitation Authority (FCWSA) elected to provide an initial interim nutrient removal upgrade designed for partial denitrification and phosphorus removal. The FCWSA meets the combined waste load allocation for the Marshall WWTP by using “credits” from the Remington WWTP, which is anticipated to produce an effluent waste load well under its allocation due to operating flows being well below design capacity.

RK&K completed the design of the interim upgrade in early 2009. The interim upgrade converted the existing nitrification reactors to a Modified Ludzack-Ettinger (MLE) process through the addition of an internal recycle (IR) pumping system and a new anoxic zone at the reactor influent. Submersible mixers were provided for the anoxic zones. A ferric chloride system was provided. A hypochlorite system for filamentous control and a replacement belt filter press were also designed as part of the interim upgrade project. The project was constructed by the FCWSA and its subcontractors.

GREENSBORO WASTEWATER TREATMENT PLANT

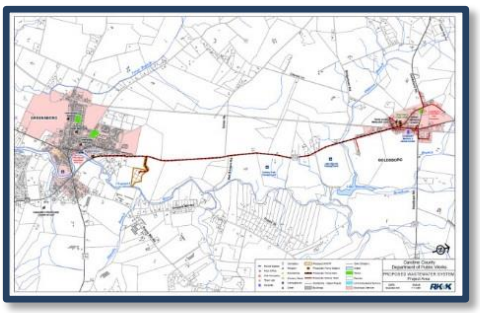
Caroline County, Maryland

Owner/Contact: Caroline County, Maryland
Leslie Grunden
403 South 7th Street, Suite 210
Denton, MD 21629
410.479.8105

Cost: $7.5 Million

Completion: Ongoing

Brief Description:



The Greensboro Regional Wastewater System is comprised of a new sanitary wastewater collection, conveyance and treatment facilities to serve the Towns of Greensboro and Goldsboro in Caroline County, MD. The Town of Greensboro, located south of Goldsboro, is constructing and will own and operate the facilities in the project which consists of 1) a sewer collection system in Goldsboro, 2) a conveyance system from Goldsboro to Greensboro, 3) a new wastewater treatment plant (WWTP) in Greensboro, and 4) a conveyance system to transport wastewater from Greensboro to its new WWTP. The new WWTP replaces an existing, dated treatment facility subject to flooding in the Town of Greensboro. The new WWTP is located on the north side of Greensboro and a new pumping station will convey flow from the old WWTP to the new plant. The Town of Goldsboro currently has no sanitary sewer collection or treatment system. The purpose of the project is to upgrade treatment to Enhanced Nutrient Removal (ENR) levels for the Town of Greensboro and to comply with a Consent Order to address failed septic systems in the Town of Goldsboro.

The project scope, and the means for its implementation, are the outcome of an extensive and exhaustive multi-year, multi- jurisdictional governmental agency (local, County, State and federal) effort. An Environmental Report was prepared in accordance with NEPA requirements as part of the study and design.

New Greensboro WWTP - The new Greensboro WWTP has a design capacity of 0.332 million gallons per day (mgd) and will provide ENR levels of treatment (4 mg/l total nitrogen and 0.3 mg/l total phosphorus). Grit removal, biological treatment using sequencing batch reactor, denitrification filters, cascade aeration, and UV disinfection will be provided. Methanol and alum storage and feed systems will be provided. Reed beds will be used to dewater sludge. A new Plant Building, housing an office and laboratory will be provided. The new WWTP will discharge to the Choptank River. The new WWTP is currently under construction.

Goldsboro Collection and Conveyance Systems - The Goldsboro sewer collection system will be constructed in the public right-of-way along the roads in town. A central pumping station will be constructed on Goldsboro's property adjacent to the Town Hall. The force main (FM) from the Goldsboro PS to the new WWTP in Greensboro will be constructed adjacent to the southbound travel lane of MD 313 and will be approximately 18,000 ft. Grinder pumps will be used at each residence. The total new collection system length is approximately 17,000 ft.

Greensboro Conveyance System - Wastewater from Greensboro will continue to be conveyed to the Town's existing WWTP location, where a new PS (the Greensboro PS) will be constructed. The existing WWTP, located on the west side of MD 313 at the Choptank River, will be decommissioned, except that the influent screening system will remain in service. The new Greensboro PS will discharge through a FM to convey wastewater to the new WWTP. The new force main is approximately 3,500 ft. The new pumping station and FM are under construction.

SWAN POINT WASTEWATER PUMPING STATION AND RECLAMATION FACILITIES

Charles County, Maryland

Owner/Contact: US Steel
Jon Dunn
600 Grant Street
Pittsburgh, PA 15219
412.433.1121

Cost: $12 Million

Completion: 2008

Brief Description:

RK&K teamed with the Whiting-Turner Contracting Company to complete a design-build project for a new wastewater treatment facility, pumping stations, and influent and effluent force mains. The project owner is US Steel. Ownership of the new facilities was transferred to Charles County once commissioning was completed. RK&K/W-T completed the preliminary design and were selected for the project in August 2004. The plant began operation in July 2007 and quickly began meeting required effluent limits.

The new wastewater treatment facility has an average daily flow design capacity of 0.3 million gallons per day (MGD) and is designed to meet the Maryland Department of the Environment's Enhanced Nutrient Removal (ENR) requirements for an annual average effluent concentration of 3 mg/l total nitrogen and 0.3 mg/l total phosphorus. The design of the facility incorporates features for a future expansion to an average daily flow capacity of 0.6 MGD.

The design of the treatment plant is based on using the EIMCO oxidation ditch technology in a four stage Bardenpho configuration. The system is designed to remove nitrogen biologically without the use of supplemental carbon. Deep bed, continuous backwash sand filters are used to remove phosphorus. Other plant processes include influent screening, grit removal, flow attenuation in a flow equalization basin, clarification in conventional circular clarifiers, and ultraviolet radiation disinfection. Sludge is stored and thickened using a gravity belt thickener prior to transport to another Charles County treatment plant for further processing. Chemical feed systems include alum for phosphorus removal, a sugar feed system for supplemental carbon, if needed, and hypochlorite for filamentous control. An emergency storage basin with one day flow storage is provided to meet shellfish protection requirements. Pre-cast post tensioned concrete construction was used extensively to provide cost savings and schedule benefits. New influent and effluent pump stations and force mains were constructed as part of the project. A new influent pump station is located at the site of the former treatment plant, which was decommissioned as part of this project. The influent and effluent force mains are each approximately 9,000 ft. in length. Odor control facilities are provided for both the force main and the treatment plant. The effluent gravity outfall was converted to a pressure sewer to increase its capacity using an innovative slip-lining technique. The retrofit provided limited environmental impact through sensitive wetland areas.

SMITHSBURG WASTEWATER TREATMENT PLANT NITRIFICATION ENHANCEMENTS

Smithsburg, Maryland

Owner/Contact: Washington County, MD
Julie Pippel
100 W. Washington Street, Room 113
Hagerstown, MD 21740
jpippel@washco-md.net

Cost: $1.6 Million

Completion: 2015

Brief Description:

The Smithsburg WWTP is located in Washington County, MD and is owned and operated by Washington County Department of Water Quality. The facility has a rated design capacity of 0.33 mgd and currently treats approximately 0.23 mgd. The plant utilizes sequencing batch reactor (SBR) technology and typically provides complete nitrification and partial denitrification during warmer months, and incomplete nitrification and denitrification during winter months. At the outset of the project, the facility was issued a new discharge permit which required year-round ammonia removal.

The County selected RK&K to evaluate and determine required improvements to meet the year-round ammonia limit. The improvements evaluated were limited to those that could be implemented as a short-term project, within 4-6 months. The improvements were also evaluated on the basis of incorporating them into the future ENR upgrade and expansion project, which is planned for construction in 3-5 years.

The selected improvement was to utilize the BioMag technology. Initially, a ballast feed system was installed and was used successfully during the cold months. By having the ballast feed system in place, the facility was able to successfully increase the MLSS prior to the coldest temperatures and prevent loss of nitrification in the winter. Procurement and contract documents were prepared based on the County directly purchasing the BioMag equipment in order to expedite the equipment installation. This was the first BioMag system to be installed and placed in full scale operation in Maryland. A significant advancement in the understanding of the BioMag technology in SBRs employing surface aerators was made in this project. The BioMag equipment generally consists of a single train system with a rotary screen, shear mill, and recovery drum. The recovery equipment was installed the following year and the project is complete.

The evaluation included an analysis of influent data, plant operating conditions, and effluent data. Several issues critical to achieving nitrification in cold weather were identified through the evaluation including influent loadings, high infiltration/inflow (I/I), inability to take a tank out of service, cooling effect of surface aerators and above-ground tanks and poor settleability issues. The evaluation determined that the facility has sufficient air and alkalinity to allow nitrification to occur. The limiting factor for maintaining nitrification during the winter months is insufficient biomass to provide a sufficient SRT at cold temperatures. Several alternatives were identified and the selected alternative was utilize Evoqua BioMag (ballasted activated sludge) technology to increase the MLSS concentration and potentially shorten the settling portion of the cycle allowing more time for the react portion. The facility is the first Evoqua BioMag SBR in the United States and is meeting the year-round effluent limits.

WINEBRENNER WASTEWATER TREATMENT PLANT ENR UGGRADE

Washington County, Maryland

Owner/Contact: Washington County/Sub to Buchart-Horn
Blen R. DeWillie, PE, Buchart-Horn
3700 Koppers Street, Suite 305
Baltimore, MD 21227
EVP@bh-ba.com

Cost: $15.5 Million

Completion: Ongoing

Brief Description:

In 2010, RK&K worked closely with the County in pilot testing of Cambridge Water Technologies' (now Evoqua) BioMag ballasted activated sludge technology at the Winebrenner WWTP in Cascade, Md. A full-scale pilot was operated for approximately ten months. The pilot configuration utilized a Four-Stage Bardenpho system followed by existing clarifiers. RK&K wrote an extensive report on the pilot study. Based on the successful pilot testing and cost savings, RK&K designed a Four-Stage Bardenpho system in conjunction with the BioMag technology to accomplish enhanced nutrient removal (ENR) without the use of downstream filters. The details of the pilot work and our findings were presented at WEFTEC and CWEA conferences in 2011.

The BioMag technology consists of enmeshing ferrous oxide (magnetite) as ballast in the activated sludge floc, thereby increasing the floc specific gravity to approximately 1.25 which enables it to be readily settled in the clarifiers. This also enables the true mixed liquor concentration in the reactor to be on the order of 8,000 – 9,000 mg/L (not including the magnetite), thereby increasing the treatment capacity of a reactor relative to one that operates at conventional mixed liquor concentrations of approximately 3,500 mg/L. Sludge wasted from the system is passed through a shear mill and a magnetic drum separator, which removes the magnetite from the sludge. The recovered magnetite is recirculated back through the activated sludge system.

The Winebrenner WWTP has a current design capacity of 0.60 mgd. The plant currently utilizes rotating biological contactors (RBCs). Nearly all flow is from communities served by septic tank effluent pumping (STEP) systems. Only a small portion of the flow from the military base, Fort Ritchie, consists of raw sewage. The plant currently nitrifies year-round, but operates at flow rates well below design capacity. Plant personnel and data records indicate that the plant has significant I&I (Influent and Infiltration) problems. Consistent flow is received from Fort Ritchie. In the winter months, the plant experiences high flow especially during snow melts, but during summer months, flow is low except for when rain events occur.

New development at Fort Ritchie is planned for upcoming years. The new development will include primarily residential users and a new collection system will be provided. As a result, the plant upgrade is being planned for normal strength residential wastewater. The plant will be upgraded for enhanced nutrient removal (ENR) for an effluent concentration of 3 mg/l total nitrogen and 0.3 mg/l total phosphorus (annual average).

Other upgrades at the plant include a replacement headworks, new influent pump station, conversion to UV disinfection and expanded sludge digestion. New chemical storage and feed facilities are also provided.

The upgrades are currently under construction.

Rummel, Klepper & Kahl, LLP
Office Locations

RK&K ENGINEERS

Responsive People • Creative Solutions