



Unsolicited Conceptual Phase Proposal
Public-Private Education Facilities and
Infrastructure Act of 2002, As Adopted by the City in 2010

Hopewell Regional Wastewater Treatment Facility

Alternative 4A-1 Light, Phase 2 Improvements



Volume I

November 2013





November 8, 2013

Mr. Mark Haley, Acting City Manager
City of Hopewell
300 North Main Street, Room 218
Hopewell, Virginia 23860

Re: Proposal for the Hopewell Regional Wastewater Treatment Facility
Alternative 4A-1 Light, Phase 2 Improvements Project

Mr. Haley,

Hopewell Nutrient Partners, A Joint Venture (HNP), a joint venture of HDR Constructors and PC Construction, appreciates the opportunity to submit an unsolicited proposal to the City of Hopewell (City) for the design and construction of the Hopewell Regional Wastewater Treatment Facility (HRWTF) Alternative 4A-1 Light, Phase 2 Improvements (Phase 2 Improvements or project). We are presenting our unsolicited proposal under the Public-Private Education Facilities and Infrastructure Act of 2002, as adopted by the City on February 9, 2010 (PPEA).

HNP is respectfully requesting that information located in Volume II of our conceptual proposal be withheld from public disclosure under the Freedom of Information Act because it contains confidential, proprietary information regarding our conceptual plan and the release of such information would materially and adversely impact the negotiating positions of HNP and the City of Hopewell. We have worked hard to restrict the amount of withheld information to permit a transparent review of our proposal. Please provide us with your written acceptance of this request and any conditions that may be imposed upon it.

HNP is a joint venture Design-Build organization comprised of HDR Constructors, Inc. (HDR) and PC Construction Company (PC), two organizations nationally recognized for our experience with the design and construction of major wastewater treatment facility projects. Our decision to form this joint venture organization was simple. Together, HDR and PC were responsible for the successful design and construction of the Phase 1 Improvements at the HRWTF. With this prior experience, we are confident we can and will meet the City's goals and expectations for the Phase 2 Improvements project. Under the leadership of HDR's Bill M'Coy, we have worked closely with the City to develop the Preliminary Engineering Report (PER) for the Phase 2 Improvements. Bill's intimate knowledge of the HRWTF combined with his prior working experience with PC means there will be no "learning curve" for HNP to overcome in developing and executing this project. Finally, HDR and PC share a corporate culture which is committed to meeting the expectations of our clients. This makes it easy for HNP to ensure this project is successful for the City.

HNP has included World Water Works (WWW) and Heyward, Inc. as exclusive key technology providers for the project. Together, we represent an integrated team able to provide turnkey design and construction for the Phase 2 Improvements. The project will provide your community a long term, reliable and regulatory compliant upgraded wastewater treatment facility. In our proposal we have suggested a procurement process which has proven successful on numerous other projects, reducing project delivery schedules and costs while producing innovative results.

HNP appreciates your consideration of our proposal and we remain eager to discuss our approach to this important project with your selection committee. Our proposed Design-Build Project Manager and primary point of contact is Bob Huie (802-922-6535 or RHuie@pcconstruction.com). You may also contact Tony Snead (602-723-8296 or Tony.Snead@hdrinc.com) or Jeff Garner (802-598-6818 or JGarner@pcconstruction.com) if you have any questions.

Sincerely,

Hopewell Nutrient Partners, A Joint Venture

Anthony J. Snead
Vice President, HDR Constructors, Inc.

Jeffrey A. Garner
Senior Vice President, PC Construction Company

EXECUTIVE SUMMARY

Introduction

Hopewell Nutrient Partners (HNP) is excited about the opportunity to be your Design-Builder for the HRWTF Phase 2 Improvements Project. HNP is a joint venture organization formed by HDR Constructors, Inc., (HDR) and PC Construction Company (PC). HDR will be the managing partner and in this role will be responsible for day-to-day management and decisions of the project delivery team. Both organizations maintain a 50 percent equity position within the joint venture. With this equity relationship, financial responsibility of the joint venture is shared in equal proportion by both organizations.

HNP has selected Bob Huie to be our overall Design-Build Project Manager. Bob is very skilled with both design-bid-build and integrated project delivery methods. With more than 30 years of progressive responsible experience, Bob understands how to develop and lead multi-disciplined teams consisting of engineering and construction talent in the execution of complex infrastructure projects. While Bob is a results oriented individual, he is able to balance the multiple competing interests which are an inherent part of wastewater treatment projects.

Bill M'Coy will serve two roles on the HNP joint venture. As the Design Manager, Bill will be responsible for advancing the design for the Phase 2 Improvements project so it can be permitted and constructed with ease. HNP believes Bill is the best person for this role because he is intimately familiar with the regulatory environment and operating challenges of the HRWTF and the work that needs to be performed to implement the Phase 2 Improvements Project. Bill will also serve as Client Service Manager to the City of Hopewell, as he has a long relationship with the City of Hopewell and has become not only your trusted engineer, but also your trusted advisor. Bill will be in regular contact with the City of Hopewell during execution of the project and will be your contact for any performance concerns.

World Water Works and Heyward, Inc., are key technology providers to the HNP joint venture. Both organizations are exclusive teaming firms to HNP and have worked closely with us during the development

of our proposal for the Phase 2 Improvements Project. Together, we will provide the planning, engineering, construction and commissioning services necessary to meet the requirements of the Phase 2 Project, to the City of Hopewell's satisfaction. The benefits offered by HNP and our proposal are summarized below.

Unmatched Experience and Leadership

HNP brings unmatched HRWTF experience and project leadership. PC has successfully constructed the two largest capital improvement projects at the HRWTF since it was started up in the mid-1970s. PC constructed the Centrifuge Dewatering Facility in the mid-1990s and the HDR-designed Phase 1 Improvements in 2012. Since 2003, HDR has brought trusted leadership and expertise to generate collaborative solutions for the City of Hopewell. HDR and PC's reputation with HRWTF staff illustrates the level of commitment and ability to deliver all of your project goals. Our established project team allows Hopewell to leverage the investment already made in our staff's knowledge of your facilities, personnel, and preferences. Additionally, HNP brings extensive experience working on large wastewater treatment plants across the region with construction budgets over \$50 million, including several design-build projects.

Proven Process Equipment

WWW is a global leader in MBBR Technology for industrial applications, and their MBBR and DAF Pilot Plant has proven to reliably meet the HRWTF process treatment objectives under varying loads and conditions over a rigorous one-year testing period. Utilizing WWWW's MBBR and DAF equipment provides HRWTF staff a high level of comfort and reliability. WWWW's team of process experts have successfully installed MBBR and DAF treatment systems in a wide range of applications including: pulp and paper, chemical, food and beverage, pharmaceutical, oil and gas, and others. These applications range in treatment from achieving only high rates of BOD removal to achieving effluent total nitrogen limits <6 mg TN/L. WWWW also has more MBBR-DAF combination installations in the municipal marketplace than any other vendor. Combining their



tremendous experience and knowledge and their unique experience of both industrial and municipal applications achieving similar goals to this project makes the selection of WWT assured success.

Integrated Design-Build Team

This technically complex project benefits from a well-rounded team of engineers and constructors providing the City of Hopewell a single point of contractual responsibility. HDR and PC team members have worked together on complex wastewater treatment plant projects including HRWTF Phase 1 Improvements and HRSD's Atlantic Treatment Plant Expansion Phase 1. Our team's established working relationships, coupled with our HRWTF knowledge, better allows us to help you identify, plan for, and solve this project's challenges.

Schedule Acceleration

Due to permitting issues and availability of grant funding, it is our understanding that the City of Hopewell is motivated to move this project forward as efficiently as possible. Using the PPEA proposal process allows the City of Hopewell to implement the project on a faster schedule. Moving forward with Phase 2 Improvements now is the City of Hopewell's best assurance to locking into achievable permit limits, receiving significant WQIF grant funding and keeping construction costs to a minimum. HNP is uniquely qualified to best accelerate the schedule due to our familiarity with the project requirements gained from HDR's work on the preliminary engineering report (PER) and WWT pilot testing.

HNP and Our Proposed Project

Our proposal provides for the implementation of the recommendations and requirements provided in the Preliminary Engineering Report prepared by HDR. The Phase 2 Improvements with optional enhancements will provide for a design average capacity of 46 million gallons per day and will include the following components: Gravelly Run Pump Station and Forcemain Improvements, Moving Bed Biofilm Reactor (MBBR) Influent Pump Station, MBBR Screenings Facility, MBBR Tanks, Blower Building, Dissolved Air Flotation (DAF) Building, UNOX Aeration Tank Modifications, Secondary Clarifier No. 9, Effluent Re-aeration and Centrifuge Addition.

Our proposal is based on the PER and we are confident this completed project will provide the City of Hopewell the ability to meet your permitted discharge requirements. Our design will also provide flexibility in facility operations as well as ease in maintaining your facility for many years into the future

Our Commitment to the City of Hopewell

HNP believes that the attached proposal will best serve the City of Hopewell and its HRWTF industrial partners to meet the anticipated new Virginia Department of Environmental Quality (VDEQ) permit requirements for nitrogen reduction in the most cost-effective and timely manner as compared to other available alternatives. Our proposal provides the City of Hopewell both a lump sum price and schedule commitment for delivering the completed Phase 2 Project. In order to stand behind this commitment, HNP has advanced the PER to a 30 percent level of design. For a qualified Design-Builder, the 30 percent design provides adequate detail for estimating, procurement and construction operations to understand the project and how it needs to be priced, built and commissioned. The confidence in our proposal is the result of HNP investing our financial resources and time to pursue this important project. HNP recognizes our investment in this proposal effort will yield results only if we are truly providing fair value and innovation to the City of Hopewell.

World Water Works and Heyward, Inc., have worked collaboratively with HNP during the development of the PER and pilot testing of the MBBR equipment. HNP is confident in the application of this technology to the Phase 2 Improvements project.

Many of the contracts executed by HDR and PC are awarded on the basis of our qualifications and outstanding references provided by our clients. These references are earned through delivering their projects on time, within budget, with high quality and with absolute transparency. We begin every project with the goal of earning a client reference which distinguishes our performance from that of our competitors. HNP is committed to earning an outstanding project reference from the City of Hopewell and we will do what is necessary to ensure this goal is achieved.

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SECTION 1 - QUALIFICATIONS AND EXPERIENCE



SECTION 1 | QUALIFICATIONS AND EXPERIENCE

1a. Team & Management Approach

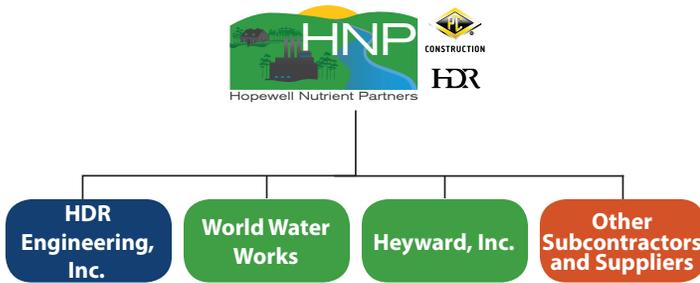
Identify the legal structure or type of private entity making the proposal. Identify the organizational structure for the project, the management approach and how each partner and major subcontractor (\$1 million or more) in the structure fits into the overall team. All members of the operator/offeror’s team, including major subcontractors known to the proposer, must be identified at the time a proposal is submitted for the conceptual stage. Identified team members, including major subcontractors (over \$1 million), may not be substituted or replaced once a project is approved and comprehensive agreement entered into, without the written approval of the City. Include the status of the Virginia license of each partner, proposer, contractor, and major subcontractor.

Legal Structure

The form of organization to be used is a joint venture, which is named the Hopewell Nutrient Partners, A Joint Venture.

Organizational Structure for the Project

The Hopewell Nutrient Partners, A Joint Venture (HNP) will be a partner-managed joint venture. HNP shall be comprised of two primary joint venture partners: HDR Constructors, Inc., and PC Construction Company. HNP will have primary subconsultants, subcontractors, and technology providers as shown below.



HNP Firm Members and Responsibilities

Firm Member	Responsibilities
HDR Constructors, Inc.	Managing Partner of HNP
PC Construction Company	Partner of HNP
HDR Engineering, Inc.	Design Engineer
World Water Works, Inc.	MBBR Technology Provider
Heyward, Inc.	Technology Provider

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Virginia License

On the following page are copies of each major partner or major subcontractor’s Virginia license.

Firm	License Type	Status of Virginia License
HDR Constructors, Inc.	Contractor	2705081516, Class A, Expires 1/31/2014
PC Construction Company	Contractor	2701015900, Class A, Expires 4/30/2015
HDR Engineering, Inc.	Professional Engineer	0411000028, Board For Architects, Professional Engineers, Land Surveyors, Certified Interior Designers Expires 2/28/2014

HNP Partners' Licenses

**DEPARTMENT OF PROFESSIONAL AND OCCUPATIONAL REGULATION
COMMONWEALTH OF VIRGINIA**

9960 Mayland Dr., Suite 400, Richmond, VA 23233
Telephone: (804) 367-8500

EXPIRES ON
01-31-2014

NUMBER
2705081516

BOARD FOR CONTRACTORS
CLASS A CONTRACTOR
CLASSIFICATIONS BLD H/H SDS

HDR CONSTRUCTORS, INC
4435 MAIN ST SUITE 1000
ATTN DAVE LUTZ
KANSAS CITY, MO 64111



 Gordon N. Dixon, Director

ALTERATION OF THIS DOCUMENT, USE AFTER EXPIRATION, OR USE BY PERSONS OR FIRMS OTHER THAN THOSE NAMED MAY RESULT IN CRIMINAL PROSECUTION UNDER THE CODE OF VIRGINIA.

**DEPARTMENT OF PROFESSIONAL AND OCCUPATIONAL REGULATION
COMMONWEALTH OF VIRGINIA**

9960 Mayland Dr., Suite 400, Richmond, VA 23233
Telephone: (804) 367-8500

EXPIRES ON
04-30-2015

NUMBER
2701015900

BOARD FOR CONTRACTORS
CLASS A CONTRACTOR
CLASSIFICATIONS BLD ELE H/H HVA PLB

PCEO INC
PC CONSTRUCTION COMPANY
193 TILLEY DRIVE
SOUTH BURLINGTON, VT 05403



 Gordon N. Dixon, Director

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Major Subcontractor: HDR Engineering, Inc. License

**DEPARTMENT OF PROFESSIONAL AND OCCUPATIONAL REGULATION
COMMONWEALTH OF VIRGINIA**

9960 Mayland Dr., Suite 400, Richmond, VA 23233
Telephone: (804) 367-8500

EXPIRES ON
02-28-2014

NUMBER
0411000028

BOARD FOR ARCHITECTS, PROFESSIONAL ENGINEERS, LAND SURVEYORS, CERTIFIED INTERIOR DESIGNERS
AND LANDSCAPE ARCHITECTS
BUSINESS ENTITY BRANCH OFFICE REGISTRATION

PROFESSIONS: ENG

HDR ENGINEERING INC
5700 LAKE WRIGHT DRIVE
SUITE 300
NORFOLK, VA 23502



 Gordon N. Dixon, Director

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Identified Firm Member Descriptions

HNP Partners



HDR, Inc. (HDR) is an employee-owned architecture, engineering, consulting, and construction firm with more than 8,600 professionals in 200 offices worldwide. Founded in 1917, HDR has a long and successful history of helping our clients make sound decisions and manage complex projects. HDR’s operating philosophy is to be an expertise-driven national firm that delivers tailored solutions through a strong local presence. HDR’s ability to draw upon company-wide resources and expertise is a great strength in meeting and exceeding your expectations.

HDR offers integrated design and construction services to clients through HDR Constructors, Inc. (HDRC), a wholly owned subsidiary of HDR. Headquartered in Kansas City, Missouri, HDRC is a fully-bonded and insured general contractor, capable of working throughout the United States and guarantees all or part of the price, schedule, quality, and/or performance of the project. Integrating construction with traditional design services provides HDR clients with a single source of project responsibility and serves to promote an atmosphere of collaboration and integration with clients, maintaining our position as your advocate.

HDR Engineering, Inc. (HDRE) is a leader in advanced wastewater treatment and nutrient removal engineering. HDR is leading the Water Environment Research Foundation (WERF) Nutrient Removal Challenge program, a multi-year program that helps communities, like the City of Hopewell, navigate the challenges associated with stringent discharge limits. HDR is involved with on-going collaborative research to assess the reliability of ammonia removal, nutrient removal, nonbiodegradable nitrogen and phosphorus, phosphorus removal technologies, denitrification kinetics, sustainability, design and operations of nutrient removal facilities. HDR brings our advanced wastewater treatment capabilities, Norfolk-based team, and practical, reliable and cost-effective solutions to the HRWTF Phase 2 Improvements project.

For the remainder of this submittal, all references to HDR are inclusive of HDR Constructors, Inc., and HDR Engineering, Inc., unless otherwise noted with “HDRC” and “HDRE” designations.

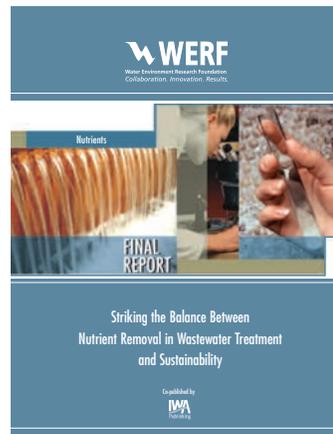
HNP Provides:

- Unmatched Experience and Leadership
- Proven Process Equipment
- Integrated Design-Build Team
- Schedule Acceleration
- Large Wastewater Treatment Plant Experience



HDR 2013 Engineering News-Record (ENR) Rankings

- No. 11 - Top 500 Design Firms
- No. 6 - Top 20 in Water
- No. 6 - Top 20 in Sewer & Waste



HDR and J.B. Neethling are the principal investigators leading the Water Environmental Research Foundation’s 5-year nutrient removal challenge.



CONSTRUCTION

PC Construction Company (PC) is a 100 percent employee-owned construction company providing professional client-focused construction solutions through proven general contracting, construction management, design-build and preconstruction planning services. With a corporate office in South Burlington, Vermont, and regional offices in North Carolina and Maine, PC’s staff of 900 professionals manages and supports project sites along the east coast.

Specializing in water and wastewater treatment construction, PC teams understand the unique challenges associated with completing complex construction operations within an actively functioning plant and have the expertise to overcome them. PC’s 55 year history has allowed PC to work on a wide variety of projects ranging from pump stations to major expansions and new plants with construction budgets over \$50 million – resulting in nearly \$4 billion of completed water and wastewater projects in the past 10 years alone. Backed by innovative design phase estimating services, PC demonstrates self-performance capabilities and a proven history of high quality, safe projects. PC ensures successful project completion while creating greater control and avoiding impacts to plant operations.

PC’s extensive experience with integrated delivery construction models provides clients with a collaborative approach which leads to the achievement of project goals. With PC’s input during the early stages of design, constructability and value engineering solutions are generated, providing substantial opportunity for lower costs and higher project quality. When focus shifts from preconstruction to construction, our water and wastewater treatment plant construction experience elevates the project to a new level with teams who possess the knowledge, skills and industry understanding to bring blueprints and drawings to reality. PC boasts over \$1 billion worth of successfully completed integrated delivery projects and a portfolio of design-build work dating back nearly 30 years. PC is ready to put their specialized team and long history of industry execution to work to deliver a successful HRWTF Phase 2 Improvements project.

PC Engineering News-Record (ENR) Rankings

- No. 13 - Wastewater
- No. 45 overall - Top 200 Environmental Firms
- No. 154 - Top 400 Contractors
- No. 94 – Top 100 Green Contractors



The collaborative approach embraced by Bob Huie and members of an integrated delivery project ensures greater flexibility for field and design changes.



Extensive logistical coordination for this 3,400 cubic yard concrete placement set the stage for success.

HNP Exclusive Technology Providers



World Water Works, Inc. (WWW) is a U.S. Employee-owned manufacturer of specialized advanced wastewater treatment solutions with design focus on performance, flexibility and longevity yielding the best water quality at the lowest life cycle costs. The company was incorporated in 1998 recognizing the need for ethical product commitment and continual innovation in technology. Executing these goals has enabled WWW to establish strong meaningful ongoing relationships with our customers.

WWW has successfully delivered advanced wastewater treatment technologies to every major continent in the world. WWW is a global leader in Moving Bed Biofilm Reactor (MBBR) and Dissolved Air Flotation (DAF) technology, recently delivering the largest municipal complete treatment MBBR in the U.S. (10.3 mgd in Midwest City, OK) and having delivered more MBBR/DAF combined solutions globally than any other company.

WWW has assembled and continues to attract a team of globally recognized technical experts. To provide the most effective and dynamic solutions, WWW's approach is to tackle problems with a diverse team consisting of engineers, scientists, operators, mechanics, electricians, accountants and other specialists. We believe this approach achieves a more creative and more encompassing solution. Further fueling innovation, WWW uniquely combines a strong Research and Development (R&D) program with In-House Manufacturing.

Staying true to these core values throughout WWW's history has translated into tremendous growth and success. In both 2012 and 2013, INC Magazine recognized WWW as one of the fastest growing companies in America. WWW's technologies have won numerous awards for delivering the highest water quality and maximum resource recovery. One recent award was the AAES Sustainability Award for a project completed at Hampton Roads Sanitation District (HRSD).



Heyward Incorporated (Heyward) is a manufacturer's representative firm serving customers in Virginia, Maryland, Delaware and the District of Columbia, with a local office located in the Richmond area.

Heyward represents leading manufacturers of process equipment for the municipal and industrial water and wastewater treatment fields, and is a technology resource partner for the HRWTF Phase 2 Improvements project. Heyward represents WWW, the MBBR/DAF technology provider, and several other manufacturers of key process equipment proposed for this project.

Having been in business for over 100 years, Heyward is known for the quality of its service, and the knowledge and expertise of its staff to provide cost-effective solutions with high quality state-of-the-art process equipment to its customers. Heyward has experienced engineers and wastewater treatment operators on staff with technical expertise in the application of the latest technologies and equipment to best meet the customer's needs. Heyward is actively engaged with WEF, VWEA, VRWA, Virginia Tech/VA DEQ Operator Short School, and other professional organizations to advance the knowledge and use of new technologies to meet more stringent environmental regulations.

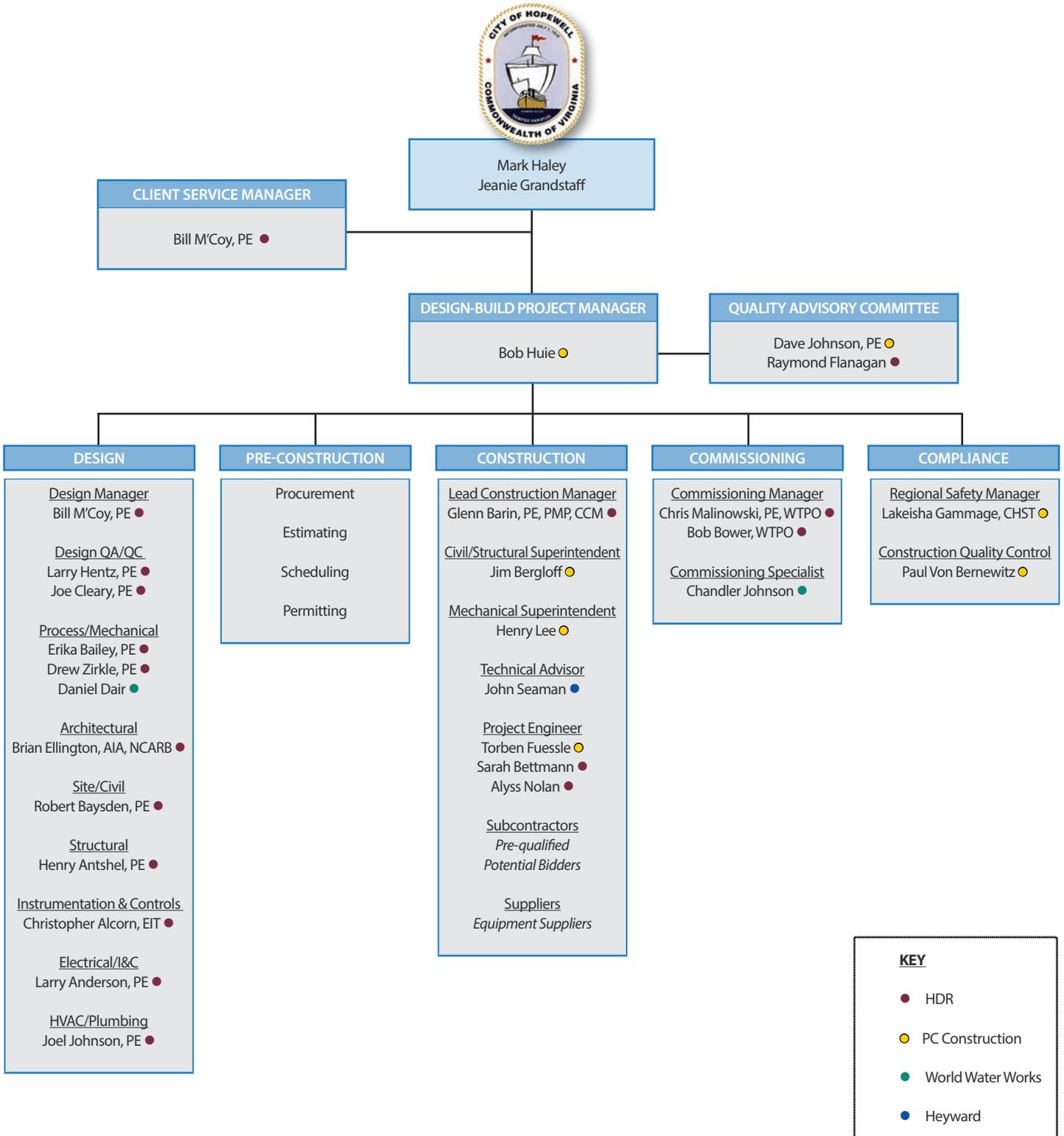
Heyward has provided local equipment sales, service and technical support to HRWTF since the plant was built in 1977, and is committed and staffed to provide a continued high level of service and support to the plant well into the future.

Local Subcontractor Participation

HNP realizes the importance of participation of local subcontractors and suppliers for this project to provide a positive impact within the local economy. We have worked with many local subcontractors on other projects in the area and will solicit pricing from qualified firms during the preconstruction phase of the project. At this stage of the process it is too early to make any firm commitments due to the level of design detail and the amount of time required for the procurement process; however, the HNP will involve the City of Hopewell and other stakeholders during the process to ensure you receive the best value and highest quality.

Project Team Organizational Chart

HNP has assembled an outstanding team that combines the strengths of our two organizations to design and construct this important project for the City of Hopewell. The organizational chart provided herein is offered not only to identify key members of our team, but also to illustrate the reporting structure of our team and how we intend to communicate with the City of Hopewell during the project.



Design-Build Project Manager Bob Huie will serve as HNP’s main point of contact for the City of Hopewell and will provide overall senior leadership for the project and manage the design-build process from inception to completion. Mr. Huie will be the City of Hopewell’s “go-to” person for the project and HNP.

Client Service Manger/Design Manager Bill M’Coy will also serve as a key point of contact for HNP. Mr. M’Coy will be available to the City of Hopewell and will lead the design team as well as assisting Mr. Huie to ensure the design and construction teams are integrated. During the design phase, Mr. M’Coy will be HNP’s point of contact for design feedback, and will facilitate design phase meetings and workshops. Mr. M’Coy will also be leading engineering support during construction.

Key Team Members’ Roles and Responsibilities

Role	Responsibilities
Design-Build Project Manager Bob Huie	<ul style="list-style-type: none"> • Main point of contact for City of Hopewell (along with Bill M’Coy) • Lead the HNP team throughout project design, preconstruction, construction, and start-up • Engage stakeholders throughout the process • Monitor relationships with the City of Hopewell and the integrated design and construction team • Provide personnel resources to support project • Ensure timely resolution of conflicts should they arise • Liaison between the HNP, engineer, and the City of Hopewell
Design and Client Service Manager Bill M’Coy	<ul style="list-style-type: none"> • Main point of contact for City of Hopewell (along with Bob Huie) • Lead the HNP design team through design and construction • Monitor relationships with the City of Hopewell and the integrated design and construction team • Provide a collaborative decision making process during design • Facilitate design phase meetings and workshops • Lead engineering support during construction
Lead Construction Manager Glenn Barin	<ul style="list-style-type: none"> • Provide overall construction management leadership • Lead preconstruction services • Lead vendor/subcontractor negotiations • Lead procurement efforts • Direct project superintendents and project engineers • Ensure progress reporting
Civil/Structural Superintendent Jim Bergloff	<ul style="list-style-type: none"> • Supervise and coordinate the day-to-day construction activities • Develop site logistics, phasing plan, and site specific safety plan • Maintain control of quality, schedule, and safety for the project • Provide oversight for start-up of plant systems and processes
Mechanical Superintendent Henry Lee	<ul style="list-style-type: none"> • Supervise installation of piping, process equipment and underground utilities • Schedule and formulate plans for shut-downs, tie-ins and startup and commissioning of equipment and process systems
Regional Safety Manager Lakeisha Gammage	<ul style="list-style-type: none"> • Implement HNP’s “Zero Accidents-No Excuses” safety philosophy • Assists the project team in the development and administration of a site-specific safety plan • Coordinates safety-related training and education initiatives
Construction Quality Control Paul Von Bernewitz	<ul style="list-style-type: none"> • Coordinates procurement activities, in particular for the MBBR unit • Supervises contract/subcontract documentation • Reviews, expedites, and coordinates submittals • Communicates with field management on scheduling activities • Expedites equipment deliveries to ensure continual workflow on the project site • Manage RFI process • Updates project schedules
Quality Advisory Committee Dave Johnson Ray Flanagan	<ul style="list-style-type: none"> • Develop and implement Project Quality Plan (PQP) • Continuous review PQP and process • Conduct regular QC Audits across all project phases
Commissioning Manager Chris Malinowski	<ul style="list-style-type: none"> • Develop start-up, commissioning, and operations and maintenance (O&M) plans • Coordinate with plant staff for training requirements • Ensure commissioning process is begun early in the project • Coordinate with technology providers, suppliers, manufacturers and subcontractors to formulate processes and procedures for equipment start-up

Bob Huie

Design-Build Project Manager

<p>Firm PC Construction</p> <p>Industry Tenure 32 years</p> <p>Education BS, Civil Engineering</p>	<p>Registration/ Certifications and Training General Contractors License</p> <ul style="list-style-type: none"> GA 	<p>Relevant Experience & Benefits</p> <ul style="list-style-type: none"> Extensive wastewater alternative delivery experience Expertise in managing solutions to complex construction issues
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As a senior project manager with PC, Mr. Huie has managed more than \$400 million worth of upgrades and expansions on water and wastewater treatment plants throughout the Southeast. He is responsible for overall project administration and management, scheduling and cost reporting and displays a talent for discovering solutions to complex construction issues.

Mr. Huie managed teams of engineers and construction personnel on two of the largest alternative delivery water and wastewater treatment plant projects in the country. His mastery of orchestrating project teams to form cohesive units with a common goal ensures projects are completed safely and the highest quality.

Select Project Experience

Ground Water Reduction Program Surface Water Treatment Facility, San Jacinto River Authority, Conroe, TX. Senior Project Director. CM-at-Risk. Project Value: \$191 million.

Yellow River Water Reclamation Facility Improvements, Gwinnett County Department of Public Utilities, Lilburn, GA. Senior Project Director. CM-at-Risk. Project Value: \$238.3 million.

South River Water Reclamation Center Upgrades, City of Atlanta, Atlanta, GA. Senior Project Manager. Project Value: \$3.5 million.

Big Creek UV System Improvements, Fulton County Department of Public Works, Roswell, GA. Senior Project Manager. Design-Build. Project Value: \$4.1 million.

Fort Wayne Hill Water Resources Center Upgrade and Expansion, Gwinnett County Department of Public Utilities, Buford, GA. Senior Project Manager. Joint Venture. Project Value: \$113 million.

Flat Creek Water Reclamation Facility, City of Gainesville, Gainesville, GA. Senior Project Manager. Project Value: \$21.5 million.

South River Water Reclamation Center Improvements, City of Atlanta, Atlanta, GA. Senior Project Manager. Project Value: \$63.5 million.

Monterey Wastewater Treatment Facility Renovation, United Water Florida, Jacksonville, FL. Project Manager. Project Value: \$9.1 million.

H.L. Mooney Wastewater Treatment Plant (WWTP) Expansion and Upgrade, Prince William County Service Authority, Woodbridge, VA. Project Manager. Project Value: \$33 million.

Olney Pump Station, Washington Suburban Sanitary Commission, Laurel, MD. Project Manager. Project Value: \$3 million.

Wastewater Treatment Facility, City of Dover, Dover, NH. Assistant Project Manager. Project Value: \$17.3 million.

Chlorination/Dechlorination Facility, Portland Water District, Portland, ME. Project Manager. Project Value: \$5.2 million.

Bill M’Coy, PE

Client Service Manager; Design Manager

<p>Firm HDR</p> <p>Industry Tenure 33 years</p> <p>Education MS, Environmental Engineering BS, Civil Engineering</p>	<p>Registration/ Certifications and Training Professional Engineer • VA, MD, DC</p>	<p>Relevant Experience & Benefits</p> <ul style="list-style-type: none"> • Project Manager for large, complex treatment plant projects including Hopewell’s Alternative 4A-1 Light Phase I and HRWTF Solids Building Phase 1a Denit Basin • Performing a wide variety of engineering services to the HRWTF since 1994
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Mr. M’Coy has a broad range of experience in the planning and design of municipal and industrial water and wastewater treatment facilities. He has extensive knowledge of Hopewell Regional Wastewater Treatment Facility’s (HRWTF) facilities, processes and staff based on his work with HRWTF dating back to the early 1990s. Under HDR’s HRWTF BOA contract, he has been responsible for numerous assignments including the Nitrogen Cost Allocations, Hopewell Plant Upset Analysis, Nitrogen Reduction Evaluation and Nitrogen Confirmation Testing, and alternatives for the municipal/industrial WWTP.

Select Project Experience

HRWTF Phase 1, City of Hopewell, VA. Project Manager. Provided segregated preliminary treatment, primary treatment, and disinfection of domestic wastewater. Responsible for facility planning, and preliminary design of upgrades for biological nitrogen removal - the segregation of domestic wastewater from industrial wastewater was required for nutrient removal within the Phase 2 Improvements. In addition, the domestic treatment facilities were upgraded to include new fine screening and vortex grit removal facilities. Three of the existing rectangular primary clarifiers were retrofitted to serve as combined primary clarifiers followed by chlorine contact tanks. This project improved influent screening, activated sludge aeration, mixing, and secondary clarification.

Basic Ordering Agreement, City of Hopewell, VA. Contract and Project Manager. General engineering services to the City’s 50 mgd HRWTF since 1994. To date, HDR has served Hopewell with over 40 task orders under this contract. Mr. M’Coy served as project manager for the Nutrient Reduction Alternatives task order where he developed a facility plan for the upgrade of plant facilities to meet new nitrogen and phosphorus limits required by the Chesapeake Bay program.

Army Base Treatment Plant Improvements Phase III, Hampton Roads Sanitation District (HRSD), Norfolk, VA. Project Manager. Designed new preliminary treatment facility (PTF), raw waste influent pump station, grit removal facilities, biological treatment basins, blower facility, secondary clarifier and RAS pump station modifications, new gravity belt filter facility, incinerator modifications, numerous solids treatment

system upgrades and modifications, conversion of the plant to a distributed control system and various support facilities. Project Value: \$80 million.

Virginia Initiative Plant Nutrient (VIP) Reduction Improvements (NRI), HRSD, Norfolk, VA. Project Manager. HDR is designing NRI and hydraulic upgrades to the 40 mgd VIP. The design includes a new PTF with pump station that is capable of discharging a portion of the peak flow to a new equalization tank, biological process tank and chlorine contact channel while operating in parallel with the existing treatment processes. Phased project delivery approach using BIM, allowed HRSD to better visualize design solutions, minimized risks, and expedited decision making. Site preparation and foundation piling for the NRI facilities were separated into an early release contract to fast-track the construction schedule which allows HRSD to be in compliance with the near-term and future requirements of the Virginia Watershed Implementation Plan. Project Value: \$100 million.

Atlantic Treatment Plant (ATP) Expansion Phase I, HRSD, Virginia Beach, VA. Project Manager. The project expanded the plant from 36 mgd to 54 mgd, with provisions for future 72 mgd expansion. The design included a new PTF, two additional primary clarifiers, 12.3 million-gallon two-pass biological treatment aeration basin, new secondary clarifiers, chlorine contact tanks, dewatering building, acid phase digestion facilities, cake storage facility, digester modifications, blower facility, and distributed control system. Project Value: \$164 million.

Dave Johnson, PE

Quality Advisory Committee

<u>Firm</u>	<u>Registration/ Certifications and Training</u>	<u>Relevant Experience & Benefits</u>
PC Construction	Professional Engineer	<ul style="list-style-type: none"> • Solid integrated delivery experience, both CM-at-Risk and Design-Build • Extensive experience with preconstruction process and value engineering
<u>Industry Tenure</u>	<ul style="list-style-type: none"> • CO, VT 	
24 years	Class A Construction Supervisor	
<u>Education</u>	<ul style="list-style-type: none"> • CO 	
BS, Construction Engineering		

Mr. Johnson brings two decades construction and management experience with particular expertise in project management, cost control, scheduling and execution of projects involving the expansion, upgrade and construction of complex water and wastewater treatment plants. His strong understanding of the preconstruction process provides a seamless transition between the planning and value engineering efforts straight through the final construction product.

Select Project Experience

HRWTF Expansion Contract 1, City of Hopewell, Hopewell, VA. Project Manager. Project Value: \$9.1 million

Hopewell Water Treatment Plant Improvements, Virginia American Water Company, Hopewell, VA. Project Manager. Design-Build. Project Value: \$22 million.

H.L. Mooney Water Reclamation Facility Expansion and Upgrade Stage 2 Phase 1, Prince William County Service Authority, Woodbridge, VA. Project Manager. Design-Build. Project Value: \$118.8 million.

McMillan Sand Filter Site Stormwater Storage, DC Water, Washington, DC. Senior Project Manager. Design-Build. Project Value: \$12 million.

Enhanced Nutrient Removal (ENR) Facilities First Contract Slurry Wall and Tankage, DC Water, Washington, DC. Senior Project Manager. Project Value: \$71 million.

Cox Creek Water Reclamation Facility ENR Upgrade PI, Anne Arundel County, Curtis Bay, MD. Project Manager. Project Value: \$11.4 million.

Linton Hall Lift Station, Prince William County Service Authority, Manassas, VA. Project Manager. Project Value: \$9.7 million.

Fuller Heights Lift Station B, Prince William County Service Authority, Triangle, VA. Project Manager. Project Value: \$2.6 million.

H.L. Mooney Phase IV UV Disinfection Facility, Prince William County Service Authority, Woodbridge, VA. Project Manager. Project Value: \$6.7 million.

Marston Water Treatment Plant (WTP) Improvements, Denver Water Board, Denver, CO. Project Manager. CM-at-Risk. Project Value: \$38.1 million.

Wemlinger WTP Renovation and Upgrade, City of Aurora, Aurora, CO. Project Manager. Design-Build. Project Value: \$5.4 million.

Raymond Flanagan
Quality Advisory Committee

Firm HDR	Registration/ Certifications and Training N/A	Relevant Experience & Benefits
Industry Tenure 46 years		<ul style="list-style-type: none"> • Providing assistance in developing project specific Quality Management Plans • Performing Zero percent reviews and Quality Assurance Audits • Insuring project controls procedures have been instituted and are being followed
Education BS, Civil Engineering		

Mr. Flanagan has 46 years of construction experience in the water/wastewater, industrial, power, and commercial industries. Throughout his career he has managed more than 150 projects with an in-place construction value of \$750 million. In addition, he has been responsible for developing and implementing project and corporate procedures for project control systems, estimating systems, management control systems and QA/QC programs. Mr. Flanagan provides project management oversight on specific design-build projects while providing support and auditing functions for the implementation of corporate and project procedures, policies, standards, and best practices. In his current role with HDR, Mr. Flanagan is responsible for implementing a consistent quality management program for HDR Constructors which integrates both design and construction procedures, policies and best practices.

Select Project Experience

ATP Expansion Phase I, HRSD, Virginia Beach, VA. Construction Review and Estimating Services. HDR evaluated alternative expansion concepts that would provide lowest life-cycle costs and improved service to HRSD. Project consisted of the design and construction services for ten different new building structures as well as renovation of some existing buildings for the expansion of the 36 mgd ATP to 54 mgd, with provisions for a future expansion to 72 mgd. Treated effluent is discharged through a 1.5 mile outfall and diffuser to the Atlantic Ocean. Project Value: \$164 million.

West Basin, Edward C. Little Water Recycling Facility Phase IV Expansion Design-Build, El Segundo, CA. Operations Manager. HDR is providing design services which include expansion of the barrier water injection from 7.5 to 12.5 mgd, expansion of the Title 22 and solids handling facilities, and new chemical feed and storage systems. The existing Title 22 lime clarifiers will be replaced by solids contact clarifiers, and the barrier water treatment facility will be expanded using microfiltration, reverse osmosis, and UV irradiation. HDR’s schedule and work plan addressed the need for detailed sequencing, pre-planning of startup activities, and testing of individual components, requiring weekly planning and coordination meetings with operations staff, the design-build team, and vendors to ensure no interruptions to plant operations.

West Palm Beach Biosolids Processing Facility Design-Build, New England Fertilizer Co., West Palm Beach, FL. Operations Manager/Client Manager. The design and construction of a Biosolids Processing Facility using an integrated, 50-50 joint venture (JV) between HDR Constructors and Turner Industries. HDR’s responsibilities included overall management of the JV, permitting assistance, design, engineering, procurement of engineered equipment, and provided supplemental field staff during construction.

Water and Sewer Design-Build Criteria, Okaloosa County, FL. Construction Review and Estimating Services. HDR was responsible for the development of the Design Criteria as well as developing the Design-Build contract documents for use by the client for the design and construction of a new 10 mgd WWTP Design-Build project.

EnerTech Rialto Biosolids Facilities Design-Build, EnerTech Environmental, Inc., Rialto, CA. Operations Manager. HDR and Filanc Construction provided design-build services for a \$83 million, 750 wet tons per day facility that produces a renewable fuel from biosolids for EnerTech Environmental, Inc. This project involves taking biosolids from five municipalities through EnerTech’s patented SlurryCarb process and converting the biosolids into a low-grade fuel (E-Fuel™). Initial facility operations commenced in summer of 2008 with full facility operation by end of 2009.

Larry Hentz, PE

Design QA/QC

<u>Firm</u>	<u>Registration/</u>	<u>Relevant Experience & Benefits</u>
HDR	<u>Certifications and Training</u>	<ul style="list-style-type: none"> • Extensive enhanced nutrient removal project experience in Mid-Atlantic region • Led the delivery of several large treatment projects by alternative project delivery methods
<u>Industry Tenure</u>	Professional Engineer	
34 years	<ul style="list-style-type: none"> • VA, MD, DC, VT, SC, PA, GA 	
<u>Education</u>		
MS, Sanitary Engineering		

Mr. Hentz has over 34 years of experience as a process engineer and project manager for biosolids, water, wastewater, sludge, leachate, and air emission control facilities. His responsibilities range from preliminary process selection studies to final design and construction of facility improvements. Mr. Hentz has developed a national reputation for enhanced nutrient removal and technological advances in biosolids treatment and odor control.

Select Project Experience

VIP NRI, HRSD, Norfolk, VA. Technical Director and Odor Control Specialist. HDR is designing nutrient reduction improvements to the 40 mgd VIP. Performed evaluation and design of new influent equalization tank, new odor control systems, and new chemical feed systems. Preliminary treatment odor control includes a two-stage system, with a biotower as the first stage to remove 99%+ of the inlet hydrogen sulfide with no chemicals, and a chemical scrubber second stage for polishing and redundancy. Equalization tank improvements will be used to allow for higher wet weather flows at the plant, with two million gallons of equalization storage. Project Value: \$100 million.

Fort Meade Water and Wastewater Improvements, Fort Meade, MD. Process Engineer. This design-build project included water and sewer pipeline replacement, design of new water storage tanks, design of new enhanced nutrient removal facilities, design of a sludge dryer, and sewer system evaluation survey of the collection system at Fort Meade.

Army Base Treatment Plant Improvements Phase III, HRSD, Norfolk, VA. Technical Advisor. The project included a new preliminary treatment facility, raw waste influent pump station, grit removal facilities, ENR facilities, blowers, and RAS pump station modifications. Mr. Hentz was responsible for odor control improvements and design of associated odor control facilities. An innovative cyanide removal system was designed by Mr. Hentz. Project Value: \$80 million.

ATP Expansion Phase I, HRSD, Virginia Beach, VA. QA/QC. Optimized the performance of the odor control facilities

during expansion. Five two-stage packed tower scrubbers were designed to treat 170,000 cfm of air from headworks, biosolids, and biological treatment processes. Innovative controls were developed to remove organic sulfides with acidified bleach. Project Value: \$164 million.

Seneca WWTP Expansion, Laurel, MD. Project Manager/ Process Engineer. Responsible for the design and construction of a 20 mgd advanced WWTP expansion that incorporates anoxic selectors, biological nutrient removal facilities, high speed centrifuges, and denitrification filters. The project also included improvements to the 60 mgd influent pumping station and new grit and screening, secondary clarifiers, chlorine disinfection, centrifuge dewatering, lime stabilization and many other facilities. Mr. Hentz later led the design of the ENR and expansion improvements.

Little Patuxent Water Reclamation Plant, Savage, MD. Project Manager, Managing Principal and Process Engineer. Mr. Hentz was responsible for the design and construction of a comprehensive plant expansion to 29 mgd. The project also included the incorporation of enhanced nutrient removal facilities. Improvements were made to the existing headworks, primary clarifiers, aeration systems, secondary clarifiers, RAS systems, internal recycle systems, and comprehensive biosolids facilities. The plant was also designed to accommodate a large industrial load, which was fermented and used to improve enhanced biological phosphorus removal. The project was delivered by design-build and construction management at risk (CMAR) contracts.

Joe Cleary, PE

Design QA/QC

Firm	Registration/	Relevant Experience & Benefits
HDR	Certifications and Training	<ul style="list-style-type: none"> • Provided environmental engineering consulting services to both private and public-sector clients in the United States, Puerto Rico, Mexico, Columbia, Brazil and Ireland
Industry Tenure	Professional Engineer	<ul style="list-style-type: none"> • Designed a new biological SBR treatment plant for pharmaceutical wastewater
43 years	<ul style="list-style-type: none"> • NY, NJ, PA, Puerto Rico 	
Education		
ME, Environmental Engineering		
BE, Civil Engineering		

Mr. Cleary has served as a consultant to industrial clients in the pharmaceutical, chemical, food and beverage, refinery, petrochemical, utilities, textile, pulp and paper and microelectronics industries. He specializes in industrial wastewater treatment and groundwater remediation. He has recently focused on food and biosolids to energy projects and removal of microconstituents in wastewater and water treatment plants. Mr. Cleary's technical and project management expertise covers alternatives evaluation, bench- and pilot-scale treatability studies, process engineering design, construction, design-build, start-up and operation and maintenance services. He has designed and started-up aerobic and anaerobic biological treatment systems, membrane processes, advanced oxidation and water recycle/reuse facilities.

Select Project Experience

Alternative 4A-1 Light Phase 2 PER, City of Hopewell, VA. QA/QC Reviewer. Preliminary engineering to evaluate alternatives to meet anticipated nutrient reduction requirements. The Alternative 4A-1 Light, Phase 2 PER presents the basis of design and recommended nutrient reduction improvements. The Phase 2 Improvements include a segregated treatment process to provide year-round nitrification and partial denitrification of the domestic wastewater and a portion of the Honeywell wastewater in a segregated treatment process and add denitrification capacity in the existing UNOX reactor to achieve additional denitrification of the combined segregated waste stream effluent and industrial flows.

WWTP Design and Troubleshooting Performance, Eli Lilly, Carolina, Puerto Rico. Project Director. Designed BNR WWTP. Conducted troubleshooting of nitrification performance issues for this high strength pharmaceutical wastewater nitrification/denitrification treatment plant. Developed sampling program to investigate root cause of loss of nitrification. Analyzed sampling data and performed BLOWIN process modeling to develop root cause and recommendations. Evaluated alternatives for upgrading capacity and converting to MBR or MBBR technology. Performed BLOWIN model analysis and developed upgrade of MLE process.

Food to Energy Facility, Confidential Client, New York, NY. Project Director for the design of a food to energy facility that will use anaerobic digestion of food waste to produce

biogas for combined heat and power production. The design includes material receiving and handling processes, a wet anaerobic digestion process, aerobic composting, biofilters for odor control and treatment of a high ammonia bearing (1,000 to 3,000 mg/L) wastewater stream. Wastewater treatment considered biological and physical/chemical alternatives. Physical/chemical (vacuum distillation) was selected during preliminary energy design as the cost effective alternative.

Feasibility Study and Engineering Design of New Wastewater Treatment Plant, Kingwood LLC, Sullivan County, NY. Project Director. Performed feasibility study of alternatives, engineering design, waste assimilation capacity (WAC) analysis of stream and water quality modeling of stream for South Brook Creek and SPDES permit application for a 0.5 mgd wastewater plant for a new housing development biological treatment alternatives was evaluated as an SBR system was designed for testing treatment to meet intermittent stream standards for BOD, ammonia and phosphorus.

NYSOGS, Summit CF Upgrade WWTP. Project Director. Design of a new 30,000 gpd rotating biological contactor (RBC) treatment plant. Developed design basis and coordinated review with NYSDEC of all permitting requirements to meet SPDES discharge limits. Design included use of existing screens and equalization tanks, new RBC package treatment system in a fiberglass enclosure, pH adjustment system, new pressure filters, ultraviolet disinfection unit and post aeration.

Erika Bailey, PE

Process/Mechanical

<p>Firm HDR</p>	<p>Registration/ Certifications and Training Professional Engineer, Environmental</p>	<p>Relevant Experience & Benefits</p> <ul style="list-style-type: none"> • Lead process engineer for most of the major process studies performed at HRWTF for the past 16 years and is extremely familiar with HRWTF and HRWTF staff • HDR process expert for Southeast region industrial wastewater projects
<p>Industry Tenure 17 years</p>	<ul style="list-style-type: none"> • VA, NC 	
<p>Education ME, Civil Engineering</p>		

Ms. Bailey has 17 years of experience in water/wastewater treatment process evaluation, design, and environmental permitting. Her specialties include municipal and industrial wastewater treatment and reuse, biological nutrient removal (BNR), treatability testing, conceptual evaluations, master planning, environmental permitting, design, and plant operations. Ms. Bailey has provided process technical support for municipal and industrial water and wastewater projects throughout the Southeast. She also served as the Practice Leader for HDR’s Wastewater Treatment Facility Planning and Water Quality Practice Group.

Select Project Experience

HRWTF Nutrient Reduction Alternatives, Hopewell, VA. Process Lead. Developed process sizing for upgrade alternatives to meet new nitrogen and phosphorus limits required by the Chesapeake Bay program and assisted with development of Basis of Design Report. Developed and evaluated a number of innovative and unusual process alternatives.

Alternative 4A-1 Light Phase 2 PER, City of Hopewell, VA. Process Lead. Preliminary engineering to evaluate alternatives to meet anticipated nutrient reduction requirements. The Alternative 4A-1 Light, Phase 2 PER presents the basis of design and recommended nutrient reduction improvements. The Phase 2 Improvements include a segregated treatment process to provide year-round nitrification and partial denitrification of the domestic wastewater and a portion of the Honeywell wastewater in a segregated treatment process and add denitrification capacity in the existing UNOX reactor to achieve additional denitrification of the combined segregated waste stream effluent and industrial flows.

Segregated Treatment System Pilot Study, City of Hopewell, VA. Senior Process Engineer. Provided technical oversight for pilot-scale operation of two parallel BNR processes at HRWTF. The study compared performance of an MBBR treatment system and suspended growth treatment system. HDR ensured that testing, sampling, data, and reporting methods met the study objectives by developing a pilot testing plan. A summary report was written documenting the results from the pilot testing.

HRWTF Ammonia Analysis, City of Hopewell, VA. Project Engineer. This study included completion of a data evaluation to benchmark TKN uptake performance during 2009 and early 2010 as compared to historical performance at the HRWTF. Results were summarized in a technical memorandum that identifies factors that may have contributed to elevated effluent ammonia concentrations during this time period.

Nitrogen Confirmation Testing, City of Hopewell, VA. Project Engineer. Performed bench-scale treatability testing to confirm assumed nitrifier growth rates of the BNR process associated with a mixture of domestic and industrial wastewaters to be treated in a segregated BNR treatment system at the HRWTF.

Hopewell Regional Wastewater Treatment Facility, City of Hopewell, VA. Project Engineer. Oversaw and assisted with the following treatability studies, process evaluations, designs, and plans for a 50 mgd, highly industrial WWTP that anticipates a future nitrogen permit limit: Treatment Plant Process Enhancement and Enrichment (TPPEE) Investigation, a 2 year biological nitrogen-reduction evaluation that included bench, pilot, and full-scale testing to identify cost-effective nitrogen-removal solutions that addressed inhibition and high-temperature issues. Preliminary design of phased nitrogen-reduction upgrades identified from biological nitrogen reduction evaluation.

Drew Zirkle, PE
Process/Mechanical

<u>Firm</u>	<u>Registration/</u>	<u>Relevant Experience & Benefits</u>
HDR	<u>Certifications and Training</u>	<ul style="list-style-type: none"> Extremely familiar with HRWTF and HRWTF staff
<u>Industry Tenure</u>	Professional Engineer	<ul style="list-style-type: none"> Design and field experience with process mechanical work
6 years	<ul style="list-style-type: none"> VA 	<ul style="list-style-type: none"> Experienced as a field engineer for the construction of large WWTP projects
<u>Education</u>		
ME, Environmental Engineering		
BS, Civil Engineering		

Mr. Zirkle’s experience consists of planning, detail design, and construction administration services in water and wastewater treatment facilities and collection systems. As a project engineer, he has worked on the design of wastewater treatment facilities, large diameter raw water transmission mains, wastewater force mains, and collection systems. His roles have ranged from detailed design and cost estimating to construction administration and startup support. During the last year and a half, he managed the construction of the ATP Digester Gas Combined Heat and Power Project. His responsibilities were communication, planning, construction management, design support and inspection.

Select Project Experience

HRWTF Phase 1, City of Hopewell, VA. Design Engineer. Provided design support for the 50 mgd industrial wastewater treatment facility. Work included civil site and yard piping modifications for the design of high solids centrifuges, centrifuge feed pumps, cake handling and conveying equipment, polymer system, incinerator modifications, odor control facilities, and instrumentation and control modifications. Prepared a preliminary engineering report for the upgrade, including the relocation of the Primary Plant and TSS removal improvements.

Sanitary Sewer System Evaluation Surveys and Sewer Rehabilitation, City of Hopewell, VA. Assistant Project Engineer. Mr. Zirkle analyzed rainfall data to identify sewers with high infiltration/inflow. Using this information, sewer mapping was developed and deteriorated sewers were evaluated via closed-circuit television videos. Work under this project consisted of sewer rehabilitation using cured in-place pipe and manhole rehabilitation.

Basic Ordering Agreement, City of Hopewell, VA. Engineer. Provided services under task order contract. Representative task orders that Mr. Zirkle worked on Phase 2 Flow Monitoring and Pilot Area Sewer Rehab.

ATP Digester Gas Combined Heat and Power System, HRSD, Virginia Beach, VA. Project Field Engineer. Provided on-site construction services for installing two 1.1 megawatt methane gas generators and a 550 scfm rated digester gas cleaning system that provides renewable electric power for the

plant. The gas cleaning system included the installation of a biological primary H₂S removal system, secondary H₂S removal system, gas blower and glycol chiller system, and siloxane removal system. Responsible for managing the construction of the project and provided design support, inspection and startup services. Management roles included overseeing the construction administration, shop drawing reviews, inspections, weekly construction meetings and monthly progress meetings. Worked closely with Plant Operations and the Contractor during design changes and coordinating startup and testing.

Northwest River WTP, Miscellaneous Modifications: Tasks 1A, 1D, and 1F, Chesapeake, VA. Design Engineer. Replaced centrifuges, flocculators, chemical feed pumps, and instrumentation and control upgrades at the plant. Work also included evaluating and designing a 2 million gallon reservoir replacement which included piping modifications to the 36-inch clearwell influent and 42-inch clearwell effluent.

Normandy Lane and City Farm Interceptor Force Main Replacements, HRSD, Newport News, VA. Lead Project Engineer. The design consists of multiple HRSD Interceptor Force Mains (IFM) and City force main relocations. Work includes relocating two 36-inch ductile iron IFM’s (3,076 linear feet [LF] and 8,924 LF) and one 18-inch ductile iron IFM (3,242 LF) within City right-of-way. Design includes bypass piping and line stops, bore and jacks of major roadways and hydraulic evaluations of affected pump stations.

Daniel Dair

Process/Mechanical

<p>Firm WWW</p>	<p>Registration/ Certifications and Training N/A</p>	<p>Relevant Experience & Benefits</p> <ul style="list-style-type: none"> • Process Design Engineer for both municipal and industrial MBBR + DAF projects. • Technical expert with biological wastewater treatment processes
<p>Industry Tenure 9 years</p>		
<p>Education BS, Biology BS, Chemical Engineering</p>		

Mr. Dair started his career as a pilot engineer for the Moving Bed Biofilm Reactors (MBBR) process with the company that originally developed the patented technology, AnoxKaldnes (now Veolia). The hands on nature of the position facilitated knowledge gained through operational experience. With a concrete understanding of the technology and established design philosophy, the jump to process design engineer was straightforward. Currently, Mr. Dair leads World Water Works’ intellectual property efforts and supports all client opportunities and projects in the Northeastern corridor. He has particular expertise in biological nutrient removal processes and is intimately familiarized with the DEMON® side stream process.

Select Project Experience

Ken’s Foods, Inc., McDonough, GA. Process Design Engineer. Upgraded industrial WWTP treating wastewater generated in the production process of edible oils and sauces. The production capacity of the facility experiences tremendous growth leading to regular overloading of the existing conventional activated sludge (CAS) plant. In order to meet the site specific constraints, an MBBR system was design upstream of the CAS system to alleviate 60 percent of the organic load. In addition to the biological process design, responsibilities included coordination with the client and contractor regarding system mechanical requirement, maintaining plant operation throughout the construction phases, producing Process Flow Diagrams (PFD) and training the plant operation staff on the new MBBR process. Other process improvements included pumping system, blower design with after coolers, chemical feed, and process monitoring and control.

Mountaire Farms, Selbyville, DE. Process Design Engineer. Services for the addition of a biological wastewater treatment system for the wastewater generated in chicken processing activities. The facility, prior to the addition of the MBBR and DAF system, was only required to pretreat using a DAF system. When the facilities local discharge limits changed, the addition of a biological treatment was required. The client selected the MBBR process for its compact footprint and ease of operation. In addition to the biological design activities, responsibilities included coordination with the client and contractor regarding system mechanical requirement, producing PFD and startup/

training the plant operation staff on the new MBBR process. The design and installation of a clarification DAF system was also required to remove the biological sludge generated in the treatment process and meet the new TSS pretreatment regulations. The current system is capable of meeting the new BOD, TKN, and TSS required by the new permit.

Water Renewal, City of Plainwell, MI. Process Design Engineer. Upgraded a municipal Rotating Biological Contactor (RBC) facility. Due to the age of the RBC system and the need for increased capacity, the city opted to decommission the existing system and install a more flexible biological treatment technology (MBBR) with additional room for expansion. The system was design for the treatment of BOD and Ammonia biologically with Phosphorous removal through metal salt addition to the secondary clarifiers. Others responsibilities: MBBR mechanical equipment layout, equipment installation inspection, operator training and startup oversight.

Noman M. Cole, Jr. Pollution Control Plant, Lorton, VA. Junior Process Design Engineer. This is the largest denitrifying MBBR system in the U.S. In order to meet new regulations (stringent total nitrogen limits), the facility selected the MBBR technology for is flexibility and proven track record as a top post-denitrification technology. Responsibilities included supporting the main process designer, performing detailed calculations regarding mixing requirements, post aeration requirements, sieve loading, etc. During the design process, alternative mixing technologies were evaluated along with the addition of “heavy” type carries.

Brian Ellington, AIA, NCARB

Architectural

<p>Firm HDR</p> <p>Industry Tenure 14 years</p> <p>Education BA, Architecture</p>	<p>Registration/ Certifications and Training National Council of Architectural Registration Boards American Institute of Architects • VA, WV, SC, NC, PA, GA, FL, DC</p>	<p>Relevant Experience & Benefits</p> <ul style="list-style-type: none"> • Over 9 years of architectural design experience exclusively on water and wastewater treatment facilities, understands special design needs for these projects • Extensive understanding of building codes and how they apply to water and wastewater buildings
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Mr. Ellington has 14 years of experience in architectural design of buildings, including water and wastewater treatment, office, laboratory, administration, and maintenance buildings; along with renovations and additions to existing buildings. Architectural design responsibilities include schematic building design, 3D modeling and rendering for presentations; preparation of construction drawings and specifications; architectural cost estimating; building material research; construction administration; shop drawing review; and construction observation.

Select Project Experience

VIP NRI, HRSD, Norfolk, VA. Architect. HDR is working to upgrade the 40 mgd Virginia Initiative Plant. Nutrient reduction improvements are necessary for compliance with near-term and future requirements specified in the Virginia Watershed Implementation Plan. Challenges include tight site conditions, an aggressive schedule, and the need for an operator-friendly design that minimizes chemical and energy use to achieve a low life cycle cost. HDR is responsible for preliminary engineering, final design, bidding, contract administration, field engineering and inspection, startup and testing, operations and training, and post-startup and certification services. Project Value: \$100 million.

Town of Cary, Cary/Apex WTF Phase III Expansion, Cary, NC. Architect. Currently providing final design services for plant process facility buildings and an expansion to the existing administration building. The administration building renovation and expansion includes a two-story addition with a new laboratory, offices, conference room, electronics shop, locker rooms, and storage.

City of Winston-Salem, Reedy Fork Pump Station, Winston-Salem, NC. Architect. Design of a new 2,200 gpm triplex wastewater pump station, 40,000 LF of 16-inch force main, 2,000 LF of gravity sewer, and the decommissioning of the existing Reedy Fork Pump Station.

Crowder Construction Company, CMU - McAlpine Creek WWMF Filters, Charlotte, NC. Architect. Design of four new filter enclosure structures used for the operation and maintenance of the existing and new filters.

HRSD General Engineering Services (GES) Contract 2010-2013, VA. Architect. Currently providing engineering services to all of HRSD’s facilities, including treatment plants, pump stations, and interceptors. Services include analysis, design, construction administration, inspection, and specialty studies.

City of Dallas, Texas, Central WWTP Grit and Headworks Improvements. Architect. Providing architectural design support for the HDR office in San Antonio, TX. Addition and renovation for the White Rock grit facility. The design includes code compliance review, plans, elevations, sections, and specifications for the grit facility renovation.



Robert Baysden, PE

Site/Civil

<u>Firm</u>	<u>Registration/ Certifications and Training</u>	<u>Relevant Experience & Benefits</u>
HDR	Professional Engineer	<ul style="list-style-type: none"> Resourceful with erosion control, site layout and storm water conveyance Technical design experience of drainage systems within water and wastewater treatment plants
<u>Industry Tenure</u>	<ul style="list-style-type: none"> VA, NC, SC, WV, GA 	
18 years	ISI Envision Sustainability Professional	
<u>Education</u>	LEED Accredited Professional for Building Design + Construction	
MBA, Business Administration		
BS, Civil Engineering		

Mr. Baysden has 18 years of civil engineering experience in the land development industry covering most business sectors private and public. He has significant experience in site planning, grading and earthwork analysis, storm water conveyance and management, sediment and erosion control, as well as sanitary sewer and water distribution systems. His experience in both design and management fosters clear communication between clients and regulatory agencies, developing clear engineering solutions to site civil challenges.

Select Project Experience

Sugar Creek WWTP Expansion, CMU, Charlotte, NC. Senior Civil Engineer. Providing engineering direction for a new fuel station, storm drainage improvements and turning movements. Provided erosion control and site layout information.

Cary/Apex WTP Phase III Expansion, Apex, NC. Site Civil Quality Control Reviewer and Engineer of Record. Design included stormwater quality, erosion control, site layout, storm water conveyance, and associated raw water pump station improvements.

NW Campus Water & Sewer Extensions, City of Greensboro, Greensboro, NC. Civil Engineer. Utility project to serve the future Guilford Technical Community College Northwest Campus and development in the associated drainage basin. Utilities included 2,713 linear feet (lf) of 6” water main, 2,320 lf of 8” water main, 11,385 lf of 12” forcemain, 2,790 lf of 12” gravity sewer, 2,829 lf of 16” gravity sewer, 10,422 lf of 16” water main and regional pump station. Project entailed easement evaluation, erosion control and NCDOT right-of-way encroachment agreements for the entire project working closely with the city, county and school.

Simons Solar, Phoenix Solar, Inc., Social Circle, GA. Civil Engineer. Provided Erosion Control and Storm Water Management in support of a 169 Acre Solar Farm in Social Circle, Georgia. Due to sensitive stream buffers and wetlands, along with challenging terrain, the site required twelve erosion control basins with six of them being converted to permanent

wet-ponds. Worked closely with Georgia Environmental Protection to develop a phased erosion control plan that would allow the contractor to grade more than 50 Acres at one time to remain on schedule.

Various Stormwater Projects, City of Charlotte, Charlotte, NC. Project Manager for M-Team Contract. Projects included Hydrologic and Hydraulic Analysis of existing watersheds and existing storm systems in addition to developing proposed solutions, modeling those solutions and producing construction documents to complete. Projects included improvements to Euclid Avenue, Broadview Drive and Sunnymede Lane.

Design-Build Queens University Residence Hall & Parking Deck, Stormwater Management, & Utility Improvements, InterCon Building Corporation, Charlotte, NC. Land Development Site Civil Engineer. Work included the demolition of tennis courts, roadways and existing utilities while providing new utility routing in support of a new, combined, residence hall and parking deck. Storm water management was provided in two vaults, with erosion control being designed in a multiple phase sequencing to facilitate construction in dense and active University campus. Project also consisted of a new private sewer system, water distribution system, parking, truck turning analysis, and hardscape.

Henry Antshel, PE Structural

Firm	Registration/	Relevant Experience & Benefits
HDR	Certifications and Training	<ul style="list-style-type: none"> • Long, successful career in design of significant water and wastewater facilities
Industry Tenure	Professional Engineer	<ul style="list-style-type: none"> • Practical, logical approach to problem solving
44 years	<ul style="list-style-type: none"> • VA, SC, NC, PA, MD, GA, OH, NY, MI, OR 	
Education		
BS, Civil Engineering		

Mr. Antshel has extensive structural engineering design and analyses experience concentrated in the water, environmental, industrial, and municipal facilities; power and energy; waste; and metals sectors. He has special skills in construction, rehabilitation and repair, vessel design, and protective coatings. Mr. Antshel has diverse experience in the heavy industrial process arena, including experience in managing and coordinating large projects and multi-disciplined principal and staff activities.

Select Project Experience

HRWTF Phase 1, City of Hopewell, VA. Structural Engineer. Responsible for design of upgrades for improvements at this municipal/industrial WWTP. New domestic treatment facilities were constructed to include fine screening and vortex grit removal facilities. Three of the existing rectangular primary clarifiers were retrofitted to serve as combined primary clarifiers and chlorine contact tanks.

ATP Expansion Phase I, HRSD, Virginia Beach, VA. Structural Engineer of Record. Improvements included expansion of headworks with fine screening and vortex grit removal tanks, 12.3 million-gallon two-pass biological treatment aeration basin, relocation of the centrifuges adjacent to the cake storage pad to eliminate cake hauling operation (saving \$250,000+ in annual O&M costs), new centrifuge dewatering building, four new gravity belt thickeners for waste activated sludge thickening, converting the biosolids holding tanks to acid-phase digester to increase volatile solids reduction by 10 percent (saving \$200,000+ annually in land application and dewatering chemical costs), conversion of six existing primary and secondary digesters to gas-phase digesters, blower facility, addition of two primary clarifiers, addition of two 160 feet diameter secondary clarifiers and rehabilitation of four existing secondary clarifiers, two chlorine contact tanks, addition of one effluent pump, primary scum handling and concentration facility, plant drain pumping station, and distributed control system. Project Value: \$164 million.

Army Base Treatment Plant Improvements Phase III, HRSD, Norfolk, VA. Structural Engineer. HDR provided engineering and construction services for the modifications and

enhancements to the waterfront facility. Designed and currently constructing a new preliminary treatment facility, raw waste influent pump station, grit removal facilities, enhanced nutrient removal facilities, blowers, secondary clarifiers and RAS pump station modifications. New gravity belt filter facilities, incinerator modifications, numerous biosolids treatment system upgrades and modifications, and chemical facilities. Project overall cost is \$88 million and included rehabilitation of older structures and numerous new facilities, all on piled foundations. Project Value: \$80 million.

VIP NRI, HRSD, Norfolk, VA. Senior Structural. Upgrading the 40 mgd VIP. Nutrient reduction improvements are necessary for compliance with near-term and future requirements specified in the Virginia Watershed Implementation Plan. Challenges include tight site conditions, an aggressive schedule, and the need for an operator-friendly design that minimizes chemical and energy use to achieve a low life cycle cost. HDR is responsible for preliminary engineering, final design, bidding, contract administration, field engineering and inspection, startup and testing, operations and training, and post-startup and certification services. Project Value: \$100 million.

York River Treatment Plant Composting Facility Design-Build, HRSD and Crowder Construction, Seaford, VA. Senior Structural Engineer. The \$44 million project included the complete design of a fully enclosed and odor controlled composting facility to process 23 dtpd of biosolids into a “Class A” compost/soil conditioning product. The project included a new control building and a 209,000 scfm synthetic media biofilter for odor control.

Christopher Alcorn, EIT

Instrumentation and Controls

<u>Firm</u> HDR	<u>Registration/ Certifications and Training</u> Engineer in Training • NC	<u>Relevant Experience & Benefits</u> <ul style="list-style-type: none"> • Process Engineer Experience • Instrumentation & Controls Experience
<u>Industry Tenure</u> 5 years		
<u>Education</u> BSE, Chemical Engineering		

Mr. Alcorn is a chemical engineer with experience in the water/wastewater treatment industry which includes general system design tasks with a current focus on Human Machine Interface (HMI) Design and PLC programming. He is also experienced as a process engineer for multiple design-build projects. As a process engineer, Mr. Alcorn has created design-build documents including specifications, P&IDs, PFDs and cost estimation documents.

Select Project Experience

Interceptor SCADA System Upgrade Preliminary Engineering, HRSD, Virginia Beach, VA. Process Engineer. Responsible for development of database of remote pump station sites and existing equipment inventory. Developed overall system architecture diagrams for SCADA systems.

Regional Municipality of Durham SCADA Upgrade, NC. Process Engineer. Responsible for development of HMI graphics, database integration, and system testing of new control elements to be integrated into the existing SCADA System. System utilizes the GE iFIX HMI/SCADA Software. Duties also included participation in the development of PLC programming using Proficy ME and GE PACS.

SCADA HMI Upgrade, Charles County Department of Utilities, MD. Process Engineer. Responsible for development of database for a HMI database from existing documentation for a Wonderware Intouch/System Platform HMI/SCADA system. Duties also included collation and review of HMI standards.

Adhesive Plant Preliminary Design/Price Estimate. Process Engineer. Development of P&IDs. Creating an overall equipment list for the proposed project as well as price estimation for each piece of equipment. Equipment specification used to obtain budgetary price information.

Adhesive Plant Detailed Design. Process Engineer. Development of P&IDs. Equipment specification for Pumps, Stainless Steel Tanks, FRP Tanks and Heat Exchangers. Equipment specification bid reviews. Development of Equipment Arrangement drawings. Pipe sizing. Multidiscipline coordination from the kickoff meeting until the end of the project. The discipline coordination involved Process, Piping, Electrical, Structural as well as the Mechanical Contractor.

Glass Manufacturing Plant – Plant Design. Process Engineer. Multidiscipline coordination from the kickoff meeting until the end of the project. The discipline coordination involved process, piping, electrical and structural as well as the mechanical contractor. Development of Utility Flow Diagrams and P&IDs for the RO System, compressed air, wastewater, and natural gas. Equipment specifications including boilers, air compressors, centrifugal pumps and air diaphragm pumps. Pipe sizing. Equipment specification bid reviews.

Tower Replacement Project at Carbon/Graphite Plant. Process Engineer. P&ID development. Developing a pipe specification document. Equipment specification for the cooling tower, pumps and valves. Equipment specification bid reviews. Multidiscipline coordination between the Process, Piping and the Instrumentation and Controls departments.

Larry Anderson, PE
Electrical/I&C

<p>Firm HDR</p> <p>Industry Tenure 34 years</p> <p>Education BS, Electrical Engineering</p>	<p>Registration/ Certifications and Training Professional Engineer</p> <ul style="list-style-type: none"> • VA, MD, SC, NC, PA, DC, OH, WV, VT, MA, NJ, TX, TN, GA, FL, DC, NY, AL, AZ, CA, HA, IL, KY, LA, NV, NM 	<p>Relevant Experience & Benefits</p> <ul style="list-style-type: none"> • Design Engineer for several WWTP design-build projects • Familiarity with environmental and code issues with respect to WWTPs
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Mr. Anderson’s responsibilities include instrumentation and control (I&C) and electrical distribution design. His experience primarily has been focused on WWTP/WTP and pump station design utilizing design/bid/build and design-build delivery systems. His I&C experience includes supervisory control and data acquisition (SCADA) for system monitoring and control utilizing programmable logic controllers (PLC), computer-based networks, human-machine interface (HMI), relay logic controls, data communications utilizing copper and/or fiber optics, wireless communications utilizing radio, cellular or satellite. Mr. Anderson’s more specific electrical experience includes back-up electrical power system design, indoor/outdoor lighting design, energy calculations, estimating electrical construction costs, electrical design for hazardous locations, overhead and underground distribution of high voltage circuits, fire alarm and signal systems, lightning protection, security systems, access control, closed-circuit TV design and layout, circuit breaker and relay coordination, load studies, fault current and voltage drop calculations and studies, and energy audits.

Select Project Experience

VIP NRI, HRSD, Norfolk, VA. Electrical Engineer. HDR is working to upgrade the 40 mgd Virginia Initiative Plant. Nutrient reduction improvements are necessary for compliance with near-term and future requirements specified in the Virginia Watershed Implementation Plan. Challenges include tight site conditions, an aggressive schedule, and the need for an operator-friendly design that minimizes chemical and energy use to achieve a low life cycle cost. HDR is responsible for preliminary engineering, final design, bidding, contract administration, field engineering and inspection, startup and testing, operations and training, and post-startup and certification services. Project Value: \$100 million.

Cedar Creek WWTP (CCWWTP) Design-Build Project, Louisville MSD. Electrical/I&C Engineer. CCWWTP was a design-build project for an average daily flow at 7.5 MGD and a peak hydraulic capacity of 32.5 MGD. Unit processes include influent pump station, grit collector, biological treatment/oxidation ditches, biological phosphorus removal, clarifiers, filters, UV disinfection, post aeration, RAS/WAS pump station and sludge holding tanks. Total project cost is \$12,043,636. The electrical/I&C design included power distribution, lighting, hazardous location requirements, lightning protection, motor controls, MCCs, VFD controllers, PLC based SCADA system, instrumentation and controls.

Fort Meade Water and Wastewater Improvements, Fort Meade, MD. Electrical/I&C Engineer. This design-build project included water and sewer pipeline replacement, design of new water storage tanks, design of new ENR facilities, design of a sludge dryer, and Sewer System Evaluation Survey of the collection system. Mr. Anderson performed the following WTP plant improvements: new filters, high service pump station upgrade, new chemical facilities, new filters, high service pump upgrade, backwash pump upgrade, new chemical facilities, new generators and automatic transfer switches, well pump upgrades, and radio telemetry system. The WWTP expansion included screening upgrade, UV disinfection, aeration upgrade, chemical facilities, remote pump station upgrade and new SCADA and control system.

Floyds Fork WWTP Design-Build, Louisville MSD. Electrical/I&C Engineer. This was the first design-build municipal WWTP project in Kentucky. Unit processes include influent pump station, grit collector, biological treatment/oxidation ditches, biological phosphorus removal, clarifiers, filters, UV disinfection, post aeration, RAS/WAS pump station and sludge holding tanks. The electrical/I&C design included power distribution, lighting, hazardous location requirements, lightning protection, motor controls, MCCs, VFD controllers, PLC based SCADA system, instrumentation and controls.



Joel Johnson, PE HVAC/Plumbing

<p>Firm HDR</p>	<p>Registration/ Certifications and Training Professional Engineer</p>	<p>Relevant Experience & Benefits</p> <ul style="list-style-type: none"> • 15+ years of WWTP HVAC and plumbing design using energy efficient technologies
<p>Industry Tenure 25 years</p>	<ul style="list-style-type: none"> • VA, SC, NC, TN, MO, OH, NY, LA, IN, FL, AL, GA 	
<p>Education BS, Mechanical Engineering</p>		

Mr. Johnson has more than 25 years experience as a mechanical systems design engineer and project manager concentrating in fluids and heat transfer applications. His experience includes building HVAC and plumbing systems focusing on energy savings, thermal comfort and water use reduction. Representative project experience is provided below.

Select Project Experience

ATP Expansion Phase I, HRSD, Virginia Beach, VA. Senior Mechanical Engineer. Provided site and building water distribution (plumbing) modifications for multiple buildings. Project Value: \$164 million.

Design-Build Mine WTP, Buchanan, VA. Senior Mechanical Engineer. As part of a design-build consortium for a major coal mining company, HDR was the facility engineer for a 2 MGD Zero Liquid Discharge (ZLD) water treatment system based on membrane and thermal processes. Objectives were to simultaneously dewater a flooded inoperable mine seam and to treat the water for subsequent reuse in nearby coal washing operations. HDR's scope included civil, structural, and electrical design as well as unit process integration, piping, conveyance, and chemical systems. As Senior Mechanical Engineer, designed elements of the HVAC, plumbing and fire protection standpipe system for the main facility.

York River Treatment Plant Composting Facility Design-Build, HRSD and Crowder Construction, Seaford, VA. Senior Mechanical Engineer. Provided fire protection sprinkler and compressed air systems design.

WWTP Master Plan and Modeling, Greenville Utilities Commission, Greenville, NC. Senior Mechanical Engineer. Evaluated all HVAC and plumbing systems on site and made recommendations for replacement and improved operation. HDR created a master plan to develop a comprehensive strategic plan which integrates wastewater treatment and operations. Key elements included asset management study/plan; future regulatory scenarios analysis; wastewater quality improvement analysis; and energy efficiency analysis.

Sugar Creek WWTP Expansion, CMU, Charlotte, NC. Mechanical Engineer. HDR provided design for expansion from a permitted capacity of 20 mgd to 28 mgd, with provisions to expand to 32 mgd or more in the near future. As Senior Mechanical Engineer designed HVAC and plumbing systems for multiple buildings on the site.

WWTP Upgrade, Thomasville, NC. Senior Mechanical Engineer. Designed laboratory building HVAC and lab hood exhaust systems, lab gas, vacuum, hot and cold water plumbing distribution and waste/soil systems. Added LPG farm and gas distribution system for facility. Designed aeration system centrifugal and rotary blowers, and distribution and basin piping. Added anaerobic digester covers, sludge heaters, chopper pump mixers, and transfer rotary/recessed impeller pumps and controls.

WWTP Upgrade, Lexington, NC. Senior Mechanical Engineer. Designed upgrade to plant chemical treatment system, adding chemical tanks, retention system, pipes/metering pumps and control. Designed complete replacement for aeration system by adding blowers, piping, controls and basin distribution manifolds.

WWTP Upgrade, Lincolnton, NC. Senior Mechanical Engineer. Designed anaerobic digester upgrades, covers, vertical mixers, sludge transfer piping/pumps, gas collection and flaring, boiler/sludge HX, dissolved air floatation thickener, solids contact reactor, contact basin pumps, flushing water system, chemical storage tanks and plant distribution piping.

Glenn Barin PE, PMP, CCM

Lead Construction Manager

<u>Firm</u>	<u>Registration/Certifications</u>	<u>Relevant Experience & Benefits</u>
HDR	Professional Engineer	<ul style="list-style-type: none"> • 10+ years of relevant experience in responsible charge of large and complex municipal and industrial water and wastewater utility projects. • Led multiple infrastructure project delivery teams recognized nationally by the DBIA and the CMAA.
<u>Industry Tenure</u>	• CA, TX Licensed Contractor	
30 years	• ID, SC, LA	
<u>Education</u>	Certified Construction Manager (CCM)	
BS, Construction Engineering	Project Management Professional (PMP)	
	Construction Quality Manager (CQM)	

Mr. Barin has 30 years of experience performing multiple roles on water and wastewater construction projects throughout the country. As an expert in Alternative Delivery, Mr. Barin has led projects and teams recognized nationally by the Construction Management Association of America (CMAA) and Design-Build Institute of America (DBIA). He brings practical and diverse expertise to complex water and wastewater projects and is skilled at handling demanding schedules and tight budgets. Mr. Barin has exemplary skills in partnering, project management, construction engineering, team development, and safety, including hands-on experience in multiple construction trades. He consistently delivers high-quality projects and high client satisfaction while minimizing risks.

Select Project Experience

North RO WTP Progressive Design-Build, City of Cape Coral, FL. Construction Manager. Mr. Barin joined this project at month 10 of a three-year project constructing a new RO WTP facility, including well field, clearwell, pump station, AST, RO treatment system, a two-story administration-laboratory building, and radio SCADA system. The project schedule had dramatically slipped and client relations were deteriorated. Mr. Barin developed a strategy to construct the project within the required time and budget, and assumed operational control of the project. He prioritized the goals of the project into achievable targets and focused the delivery team to effectively execute construction fundamentals and control risks. The efforts of the new construction team resulted in a successful turnaround, client appreciation and a Corporate President’s Award for Most Improved Project. Over 700,000 work hours were logged with Zero Lost Time Accidents. This \$111 million project received a national “Water Projects over \$50M, Merit Award” from the DBIA.

Corona Del Mar WTP Phase II Upgrades Progressive Design-Build, Goleta Water District, Goleta, CA. Construction Manager. Mr. Barin led this project from start to finish, achieved high customer satisfaction, maintained budget, and retrofit multiple processes without any disruption to the plant’s 35 years of operation. His delivery team turned over the completed facility within the required time frame and with Zero LTA. This \$23M project included a Laboratory

and Operations building that received LEED Gold. The Construction Management Association of America selected this project as the “Best Infrastructure Project, under \$50 million” in 2008. It was also recognized by the DBIA for “Excellence in Water Infrastructure” in 2009.

Napa River Flood Control Program Phase 2 Design-Build, U.S. Army Corps of Engineers (USACE), CA. Construction Manager. Mr. Barin planned and supervised construction to move over 400,000 tons of soil, transport and disposal of 145,000 tons of TPH-contaminated soils off site within a 10 week period. The work required extensive excavation, ½-mile of sheet piles, a dewatering and treatment system to manage 50 million gallons of contaminated water, and grading to re-sculpt the east riverbank immediately adjacent to downtown Napa. The project had Zero Lost Time Accidents. \$12.1 million.

300 kW, 2.9 Million BTU Cogeneration Pilot Station for WWTP Design-Build, Escondido, CA. Construction Manager. Mr. Barin oversaw the pre-project planning, design, preconstruction, construction, and commissioning of this pilot station. The station is integrated with the existing WWTP anaerobic digesters to recover methane that powers microturbine generators that produce electricity for peak shaving and capturing generator exhaust for heating digester tank recirculation water – an 85 percent efficient process. He also presented the project at technical conference in 2001. \$1.4 million.

Jim Bergloff

Civil/Structural Superintendent

Firm PC Construction	Registration/ Certifications and Training First Aid/CPR and AED OSHA 10-hour	Relevant Experience & Benefits <ul style="list-style-type: none"> • Extensive WTP and WWTP experience • Thorough understanding of the scheduling requirements for tie-ins to existing systems without disruption of flows
Industry Tenure 26 years	Field training: confined space, injury management, scaffold, fall protection, excavation, steel erection, lockout/tagout, crane awareness, rigging	
Education N/A		

Mr. Bergloff's extensive experience constructing, expanding and upgrading water and wastewater treatment plants comes from a lengthy history of field exposure, beginning as a carpenter and progressing to project superintendent. As a project superintendent with PC, Mr. Bergloff manages all field operations and subcontractor activities. He maintains responsibility for all work activities in accordance with the schedule while ensuring the project requirements and goals are met and work is performed to the highest quality.

Select Project Experience

Tupelo Bayou WWTP Improvements, Conway Corporation, Conway, AR. Project Superintendent. Project Value: \$66.3 million.

Triangle WWTP Expansion Phase 3, City of Durham, Durham, NC. Project Superintendent. Project Value: \$10.7 million.

R. A. Thomas WTP Improvements, Winston-Salem/Forsyth County Utility Commission, Winston-Salem, NC. Project Superintendent. Project Value: \$56.3 million.

Durbin Creek WWTP Expansion, Renewable Water Resources, Fountain Inn, SC. Project Superintendent. Project Value: \$39.2 million.

Northwest WTP Improvements, Winston-Salem/Forsyth County Utility Commission, Lewisville, NC. Project Superintendent. Project Value: \$51.7 million.

South River Water Reclamation Center Upgrades, City of Atlanta, Atlanta, GA. Project Superintendent. Project Value: \$4 million.

McAlpine Creek Residuals Management Facility, Charlotte-Mecklenburg Utilities, Pineville, NC. Project Superintendent. Project Value: \$13.7 million.

Davis WWTP Expansion, North Charleston Sewer District, Charleston, SC. Project Superintendent. Project Value: \$22.6 million.

Mauldin Road WWTP Expansion, Renewable Water Resources, Charleston, SC. Project Superintendent. Project Value: \$28.1 million.

USACE, Dos Rios Solids Handling Facility, San Antonio, TX. Project Superintendent. Project Value: \$8.7 million.

USACE, NISE East Engineering Center Naval Weapons Station, Charleston, SC. Project Superintendent. Project Value: \$32 million.

Henry Lee

Mechanical Superintendent

<u>Firm</u>	<u>Registration/ Certifications and Training</u>	<u>Relevant Experience & Benefits</u>
PC Construction	OSHA 10-Hour	<ul style="list-style-type: none"> • Extensive experience with large mechanical and electrical systems, building instrumentation and controls systems • Effective at fully implementing commissioning processes
<u>Industry Tenure</u>	First Aid/CPR and AED	
30 years	Field training: confined space, excavation, fall protection, scaffold awareness, lockout/tagout, signaling, crane awareness, steel erection	
<u>Education</u>		
N/A		

Mr. Lee has extensive experience with the installation and coordination of multiple disciplines, ensuring project costs and schedule goals are met. He is adept at logistics, scheduling, materials planning and purchasing, submittal reviews, subcontractor coordination and field quality control. As a trade superintendent, Mr. Lee provides direction to all subcontractors on the layout and installation of pipe and utilities throughout the site. He resolves conflicts through early coordination meetings and detailed drawings review, and is intimately involved with project commissioning and is responsible for start-up inspections.

Select Project Experience

H.L. Mooney Water Reclamation Facility Expansion and Upgrade Stage 2 Phase 1, Prince William County Service Authority, Woodbridge, VA. Trade Superintendent. Design-Build. Project Value: \$118.8 million.

H.L. Mooney Water Reclamation Facility Phase 1B Odor Control System, Prince William County Service Authority, Woodbridge, VA. Trade Superintendent. Project Value: \$5.1 million.

Corbalis WTP Phase III, Fairfax County Water Authority, Herndon, VA. Trade Superintendent. Project Value: \$159.1 million.

Linton Hall Lift Station, Prince William County Service Authority, Manassas, VA. Mechanical Foreman. Project Value: \$9.8 million.

Fuller Heights Lift Station B, Prince William County Service Authority, Triangle, VA. Mechanical Foreman. Project Value: \$2.6 million.

H.L. Mooney WWTP Expansion and Upgrade, Prince William County Service Authority, Woodbridge, VA. Mechanical Foreman. Project Value: \$33 million.

South River Water Reclamation Center Improvements City of Atlanta, Atlanta, GA. Mechanical Foreman. Project Value: \$63.5 million.

Lake Blalock WTP, Spartanburg Water Commission, Spartanburg, SC. Mechanical Foreman. Project Value: \$30.4 million.

Abingdon WTP, Harford County Department of Public Works, Abingdon, MD. Mechanical Foreman. Project Value: \$13.4 million.

John Seaman

Technical Advisor

Firm Heyward	Registration/Certifications Wastewater Works Operator License (WWWOSSP #1965003158)	Relevant Experience & Benefits
Industry Tenure 36 years	<ul style="list-style-type: none"> • VA 	<ul style="list-style-type: none"> • Licensed Class 1 Wastewater Plant Operator • Virginia Tech/DEQ Operator Short School Instructor
Education BS, Biology		<ul style="list-style-type: none"> • WWW MBBR Pilot Plant Operations Team Member

Mr. Seaman is Vice President at Heyward and has been with the company for 23 years. Prior to joining Heyward, Mr. Seaman was Director of Utilities for the City of Franklin, Virginia, and was responsible for the operation of the City’s WTPs and WWTPs, and utility systems. He is a licensed Class 1 WWTP Operator, and has been an instructor at the Virginia Tech/ Virginia DEQ Annual Operator’s Short School for 34 years, teaching wastewater treatment biology and biological treatment processes to plant operators seeking State certification. He has wide-ranging practical experience with wastewater plant operations and biological treatment processes, and in the design and operation of process treatment equipment and systems. He was directly involved as a WWW team member with the Hopewell MBBR Pilot Plant program, including pilot unit set-up and commissioning, process controls, troubleshooting, test program protocol, and provided continuous oversight of the testing program. He will provide invaluable on-site technical support to HDR and PC during equipment installation and commissioning to ensure the equipment is installed, started-up and operated correctly, and achieves the specified performance for the system. He will also assist in training the HRWTF Operators in proper operation of the new MBBR equipment, and will provide local technical support to the plant on a long-term basis after the equipment is placed into operation.

Select Project Experience

James River Treatment Plant (TP) Nutrient Upgrades, HRSD, Newport News, VA. Technical Support. Provided support to HRSD plant operating staff, the engineer, and contractor for installation of full-scale pilot demonstration of Integrated Fixed-Film Activated Sludge (IFAS) treatment system in one of eight process trains, and after successful demonstration testing, provided technical support for procurement, installation and commissioning of IFAS treatment system equipment for the entire 20 mgd TP.

York River TP Demonstration Plant, HRSD, Seaford, VA. Technical Support. Provided support to HRSD plant operating staff, the engineer, and contractor for installation of full-scale Demon demonstration plant for anammox side-stream treatment for ammonia reduction in centrifuge centrate at this 15 mgd TP.

HRWTF, Hopewell, VA. Technical Support. For over 20 years, John has provided personalized technical support to the HRWTF staff including consultation for equipment upgrades or replacements, spare parts and service support, troubleshooting, and warranty repairs and replacements, for numerous process equipment installed at the plant furnished over the years by

manufacturers that Heyward represents. The various projects where Mr. Seaman and Heyward have provided equipment and service support to HRWTF include: Centrifuge Dewatering Facility, Domestic WWTP Pump Station, Rehabilitation of the Primary and Secondary Clarifiers, Installation of Post-Aeration Static Aerators, and most recently the Segregated Domestic Headworks and Primary Clarifier Modifications. Mr. Seaman is very familiar with the design and operation of the HRWTF, and personally knows and works well with the plant operating and maintenance staff, which will be beneficial to Hopewell for the successful installation and commissioning of the new proposed MBBR treatment process.

Technical Support, Various Clients. Technical Support. Provided support and process equipment sales and service for plant upgrades at the following municipalities: HRSD Atlantic TP (Virginia Beach); HRSD Nansemond TP (Suffolk); HRSD Boat Harbor TP (Newport News); HRSD Williamsburg TP; Henrico County Regional WRF; Emporia WWTP; Chesterfield County Proctor’s Creek and Falling Creek WWTPs; City of Richmond WWTP; DC Water Blue Plains WWTP; City of Baltimore Back River and Potapasco WWTPs.

Torben Fuessle
Project Engineer

<u>Firm</u> PC Construction	<u>Registration/ Certifications and Training</u> PC Leadership Development Program	<u>Relevant Experience & Benefits</u> <ul style="list-style-type: none"> • Experience with buyout, procurement and coordination of bid packages • Adept at monitoring and overseeing multiple subcontractor activities
<u>Industry Tenure</u> 9 years	OSHA 10-hour	
<u>Education</u> BS, Construction/ Mathematics	First Aid/CPR and AED Field training: fall protection, scaffold awareness, excavation, rigging level 1, injury management	

Mr. Fuessle brings demonstrated leadership capabilities and technical construction skills with a focus on water and wastewater treatment projects. Having held positions in field engineering, project engineering, estimating, scheduling, submittal coordination and site supervision, Mr. Fuessle’s well-rounded experience aids in the successful execution of the construction project. Mr. Fuessle is responsible for overall project administration and management, scheduling and cost reporting. He plans, monitors and manages construction activities to ensure compliance with all requirements and project goals.

Select Project Experience

Tupelo Bayou WWTP Improvements, Conway Corporation, Conway, AR. Project Controls. Project Value: \$66.3 million.

HRWTF Expansion, City of Hopewell, Hopewell, VA. Project Engineer. Project Value: \$9.1 million.

Virginia American Water Company, City of Hopewell, Hopewell, VA. Project Engineer. Design-Build. Project Value: \$22 million

R.A. Thomas WTP Improvements, Winston-Salem/Forsyth County Utility Commission, Winston-Salem, NC. Project Engineer. \$56.3 million.

Sugar Creek WWTP Pump Station, Charlotte-Mecklenburg Utilities, Chapel Hill, NC. Project Engineer. Project Value: \$45.9 million.

Mason Farm WWTP Upgrade and Improvements, Orange Water and Sewer Authority, Chapel Hill, NC. Project Engineer. Project Value: \$40.5 million.



Sarah Bettmann
Project Engineer

<u>Firm</u>	<u>Registration/</u>	<u>Relevant Experience & Benefits</u>
HDR	<u>Certifications and Training</u>	<ul style="list-style-type: none"> • Experience with buyout, procurement and coordination of bid packages
<u>Industry Tenure</u>	OSHA 10-Hour Construction Safety,	<ul style="list-style-type: none"> • Adept at monitoring and overseeing multiple subcontractor activities
10 years	Construction Industry Technician	
<u>Education</u>		
BS, Construction Management		

Ms. Bettmann has 10 years project controls experience working on wide range of design-build projects including water and wastewater facilities for industrial and municipal clients. Ms. Bettmann’s responsibilities include managing multiple prime contracts, and their associated subcontracts and purchase orders, maintenance of contractual agreements, certificates of insurance, payment & performance bonds, RFIs, submittals, invoicing, and managing project costs. She is involved with the closeout of projects obtaining final lien waivers, and preparing project documents for archiving. She also assists with daily field construction operations, scheduling, and safety. Ms. Bettmann’s other duties involve the pursuit of new work from estimating, bidding, proposal development and submission, through prime contract execution.

Select Project Experience

Los Alamos National Security LLC, Los Alamos National Laboratory (LANL), Sanitary Effluent Reclamation Facility (SERF), Los Alamos, NM. Project Controller. HDR provided integrated design-build services to perform all work necessary to design and construct the expanded SERF and infrastructure. Working closely with LANL construction management personnel, HDR completed the project within the 14 month contract time frame. HDR successfully managed 18 subcontractor companies through LANL’s stringent safety program without a single first-aid incident or serious injury.

Perchlorate Treatment Design-Build AEP-3 Project, City of Pomona, Pomona, CA. Project Controller. HDR was contracted to design, construct, start up, complete acceptance testing and provide permitting assistance for a 16.6 mgd perchlorate anion exchange treatment plant. Design included providing intermediate pumping to deliver the finished water to Reservoir 6, redundancy of process equipment, security for the facility, and incorporation of the system operation into the City’s SCADA network and with the existing AEP processes.

Design-Build Groundwater Treatment System, Henderson, NV. Project Coordinator. HDR completed an integrated design-build contract to modify and expand a groundwater treatment system using a fluidized bed reactor (FBR) system. The owner operates a groundwater treatment system to remove perchlorate. The FBR system is sized to reduce up to 230 parts

per million (ppm) of perchlorate (up from 130 ppm) in the groundwater to non-detect levels (per EPA Method 314.0), as well as the oxygen, chlorate and nitrate in a flow of up to 800 gallons per minute (gpm).

Aquifer Storage and Recovery (ASR) System, Boise White Paper LLC, Wallula, WA. Project Controller. Under an integrated design-build delivery contract, HDR designed and constructed the ASR project. The ASR is designed to supply the plant with 3 MGD of cool stored water during the summer months, which will displace the use of 5 MGD of warmer river water. HDR professional services for this project included: water quality testing; ASR feasibility study; regulatory coordination and permitting; design; construction; and startup.

Far West 4 mgd Water Treatment Plant, Far West Water & Sewer Inc., Yuma, AZ. Design-Build Project Engineer. HDR was contracted to design and construct a new 4 mgd water treatment facility to support its existing plant #1. The project involved a two-phased design-build approach, with Phase 1 being broken into a Membrane Filtration Pilot Study and Program Development. Upon completion of the Membrane Filtration Pilot Study, and consistent with its findings, HDR secured a Notice to Proceed for project Program Development and Design.

Alyss Nolan

Project Engineer

<u>Firm</u> HDR	<u>Registration/ Certifications and Training</u> OSHA 10-Hour Construction Safety	<u>Relevant Experience & Benefits</u> <ul style="list-style-type: none"> • Experience with buyout, procurement and coordination of bid packages • Adept at monitoring and overseeing multiple subcontractor activities
<u>Industry Tenure</u> 3 years		
<u>Education</u> BS, Construction Engineering		

As a construction project engineer, Ms. Nolan's responsibilities include managing multiple prime contracts, and their associated subcontracts and purchase orders, maintenance of contractual agreements, certificates of insurance, payment & performance bonds, Requests for Information (RFI), submittals, invoicing, and managing project costs. She is involved with the closeout of projects, obtaining final lien waivers, and preparing project documents for archiving.

Select Project Experience

Anaerobic Digester Facility EPC, EDF Renewable Energy, Heartland Biogas, LLC, LaSalle, CO. Construction Project Engineer. HDR is contracted for the design, construction and startup of the \$33.7 million Heartland Biogas anaerobic digester facility near Greely, Colorado. HDR's scope of services includes engineering design for Phases 1A and 1B, and construction, including subcontracting, procurement and commissioning of operations. The Heartland digester facility is expected to be fully operational in 2015 and capable of exporting up to 1.5 million British Thermal Units annually, making it the largest anaerobic digester facility in North America.

Arthur H. Bridge Water Treatment Plant, Cucamonga Valley Water District (CVWD), Rancho Cucamonga, CA. Construction Project Engineer. Design-Build contract to upgrade the Arthur H. Bridge Water Treatment Plant to an optimized design capacity of 2.0 MGD plus provide an additional 1.0 MGD of standby capacity. HDR is working with the District to restore the intake to its original condition and its consultants and permitting agencies to upgrade the intake to a more reliable and self-sustaining design.

ASR System, Boise White Paper LLC, Wallula, WA. Construction Project Engineer. Under an integrated design-build delivery contract, HDR designed and constructed the ASR project. The ASR is designed to supply the plant with 3 MGD of cool stored water during the summer months, which will displace the use of 5 MGD of warmer river water. HDR professional services for this project included: water quality testing; ASR feasibility study; regulatory coordination and

permitting; design; construction; and startup.

Design-Build Oil and Gas Exploration and Production Waste Processing Facilities, Multiple Sites – TX, OK, and WY. Construction Project Engineer. HDR provided integrated design-build services for multiple oil/water processing and separation facilities in various locations throughout the southern, southwestern, and Rocky Mountain regions of the United States. These facilities receive and treat liquid and solid oil field Exploration and Production (E&P) wastes.

Salt River Pima Maricopa Indian Community Zone 2 Water System Improvements, Scottsdale, AZ. Construction Project Engineer. HDR completed the design and construction of a 4 million gallon buried reservoir, 21 mgd pump station, 13 mgd arsenic treatment system, demolition of the existing facility, building of a new well and approximately three miles of potable water lines ranging in size from 12 to 48 inches. Construction cost of the project was \$28 million.

Facility Expansion and Upgrades, Valmont Industries Inc., Brenham, TX. Construction Project Engineer. HDR provided design-build services to expand Valmont Industries' manufacturing facility in Brenham, Texas. This project involved the modification of existing structures to allow the addition of approximately 32,000 square feet of pre-engineered metal building, which Valmont intends to use for increasing its production of large-diameter metal utility poles.



Christopher Malinowski, PE, WTPO

Commissioning Manager

<u>Firm</u>	<u>Registration/ Certifications and Training</u>	<u>Relevant Experience & Benefits</u>
HDR	Wastewater Treatment Plant Operator	<ul style="list-style-type: none"> • Operations experience at a wide variety of facilities. • Startup and commissioning experience of large facilities
<u>Industry Tenure</u>	• TX	
27 years	Professional Engineer	
<u>Education</u>	• OK, TX	
BS, Civil Engineering		

Mr. Malinowski is responsible for the development of HDR’s operations and maintenance business line in both the municipal and industrial sectors. Services provided include operations and maintenance contracts, startup and commissioning services, asset management, plant decommissioning, operability reviews, operations troubleshooting, and operational efficiency studies. His experience includes the management, design, operation and maintenance, and project development of water and wastewater systems. His experience also includes developing project strategies, pricing, developing teaming arrangements, running and interpreting financial models and preparing project pro formas. Mr. Malinowski has extensive experience operating municipal utilities, and a wide variety of industrial sites in the refining, chemical, auto, paper, and food & beverage industries.

Select Project Experience

Sheldon Road Municipal Utility District, Houston, TX. Chief Operator. The system serves approximately 500 connections. Responsible for two wastewater treatment plants and two groundwater plants.

Southwest Water Company, Sugar Land, TX. Vice President of Operations. Mr. Malinowski had overall responsibility for over 300 water and wastewater systems and 400 employees, including environmental and safety performance, client relations, contract compliance, and staff management.

Southeast Water Treatment Plant, City of Houston, TX. Start-up Lead. Mr. Malinowski managed the staff that successfully started up and commissioned a plant expansion that increased the capacity from 120 mgd to 200 mgd. Working for the project’s contractor, all systems went through a detailed commissioning process. In addition, the expansion was operated for 14 days without shutdown during a “proving phase” prior to putting the expansion into service.

North Fort Bend Water Authority, Houston, TX. Vice President of Operations. Mr. Malinowski managed the staff that operates and maintains this regional surface water supply system. Water is received from the City of Houston and is distributed to dozens of water districts within Fort Bend County. This system includes a 10 mgd pump station and over 25 miles of transmission lines.

Bexar Metropolitan Water District, San Antonio, TX. Project Developer. Oversaw the first Design, Build, Operate project for a water treatment plant in Texas municipal water market for a 9 mgd ultra filtration membrane plant. This facility has now been in service for over 15 years.

Midland Freshwater Supply District Number One, Midland, TX. Managing Director. While at Southwest Water Company, Mr. Malinowski managed the team that is performing the startup and commissioning of the T-Bar Ranch project, a new water supply system for the City of Midland. This involves approximately 40 wells, 60 miles of transmission lines, a ground storage tank, and booster pump station.

Fort Bend County Levee Improvement District Number 2, Sugar Land, TX. Vice President of Operations. Managed the staff that operated and maintained this project. This system of levees and pump stations protects much of Sugar Land from the Brazos River. The staff operated and maintained two high flow pump stations and inspected all of its levees.

Wastewater System Operations, Stonegate Village Metropolitan District, Englewood, CO. Vice President of Operations. Mr. Malinowski managed the staff that operated and maintained this district’s wastewater treatment facility. It was taken over from the previous operator, and significant improvements were made to bring the facility into compliance.

Bob Bower, WTPO
Commissioning Manager

<u>Firm</u>	<u>Registration/</u>	<u>Relevant Experience & Benefits</u>
HDR	<u>Certifications and Training</u>	<ul style="list-style-type: none"> • Served as a municipal wastewater systems operator and manager for 14 years
<u>Industry Tenure</u>	Wastewater Treatment Plant Operator	<ul style="list-style-type: none"> • Highly empathetic to O&M staff needs and continually strives to scrutinize designs from the perspective of long-term ownership and operational flexibility
35 years	• CO, WA	
<u>Education</u>	Construction Documents Technologist	
BS, Environmental Science		

Mr. Bower has 35 years of experience in the commissioning, operation, maintenance, and management of municipal wastewater pumping and treatment distribution facilities. His experience includes preparing O&M manuals, providing operations assistance, evaluating and optimizing treatment processes, troubleshooting equipment, commissioning pumping and treatment facilities, delivering operator training, devising automated control strategies, and designing plant process laboratories. Mr. Bower is the recipient of the WEF 2006 Gascoigne medal award for plant operations improvements. He also served on the WEF task force that prepared manual of practice MOP 29: Biological Nutrient Removal (BNR) Operation in Wastewater Treatment Plants.

Select Project Experience

Engineering and Inspection Services, City of Hopewell, VA. Start-up Manager. HDR serves as the City of Hopewell’s consultant to its 50 mgd Regional Wastewater Treatment Facility under a long-term Basic Ordering Agreement. HDR evaluated and designed facility upgrades to meet the new more stringent requirements mandated under the Chesapeake Bay Program, as well as performed other miscellaneous asset management projects.

ATP Expansion Phase I, HRSD, Virginia Beach, VA. Start-up Manager. The project expanded the plant from 36 mgd to 54 mgd, with provisions for future 72 mgd expansion. The design included a new PTF, two additional primary clarifiers, 12.3 million-gallon two-pass biological treatment aeration basin, new secondary clarifiers, chlorine contact tanks, dewatering building, acid phase digestion facilities, cake storage facility, digester modifications, blower facility, and distributed control system.

Clean Water Services, Durham Wastewater Treatment Plant Expansions, Tigard, OR. Operations Specialist. Provided numerous improvements and expansions at the plant for over 10 years. Responsible for preparing O&M manuals, preparing startup plans, assisting with startup and commissioning of new equipment and systems, preparing training operator materials, providing operator training, providing operational assistance after startup, and performing constructability reviews.

West Brunswick Water Reclamation Facility, Brunswick County, NC. Commissioning Manager. Prepared startup and commissioning plan, including component testing as well as instrumentation and control (I&C) system testing for new wastewater system consisting of five pump stations, 3 mgd wastewater treatment plant, reclaimed water distribution system, and 700 acre drip irrigation system. Prepared and presented operator training and participated in startup and. Treatment plant equipment included influent screens, flow equalization basin, two oxidation ditches, two clarifiers, two effluent disc filters, chlorine contact basin, hypochlorite storage and metering, effluent pumps, return activated sludge (RAS) and waste activated sludge (WAS) pumps, gravity belt thickening, and ATAD solids digestion.

McAlpine Creek WWTP, City of Charlotte, NC. Operations Specialist. Provided equipment and instrumentation and control (I&C) system commissioning for 140 mgd screening and grit facility, as well as prepared and presented operator training, and participated in startup and commissioning.

Chandler Johnson

Commissioning Specialist

Firm World Water Works	Registration/ Certifications and Training N/A	Relevant Experience & Benefits <ul style="list-style-type: none"> • Process Design Manager for both municipal and industrial MBBR + DAF projects. • Technical expert with biological wastewater treatment processes
Industry Tenure 18 years		
Education MS, Environmental Engineering BS, Civil/Environmental Engineering		

Mr. Johnson is recognized globally for his knowledge and experience in MBBR and IFAS systems. He has at least played a role in over 80% of the MBBR/IFAS systems in the US to date. Before joining World Water Works in 2010, Mr. Johnson gained experience working on MBBR/IFAS projects at Purac Engineering, as the MBBR product manager for Waterlink Biological Solutions Division, and as director of sales and later US division President for AnoxKaldnes (now Veolia), where he trained all the business units in his territory on the MBBR and IFAS technology. Chandler is focused on building the company's biological division, leading the company's initiative to be the leader in cutting edge BNR technologies which currently highlights the innovative DEMON® process. Mr. Johnson has presented and published numerous technical papers and continues to be active in such industry organizations as WEF and Water Environment Research Foundation (WERF).

Select Project Experience

Midwest City WWTP, Midwest City, OK. Process Design Engineer. With impending nutrient regulations on the WWTP, the existing RBC's would not meet the requirement. Additionally, mechanical upgrades were needed at the plant. The MBBR technology was selected as the process to upgrade as was previously done at the South Adams County WWTP and Cheyenne Crow Creek WWTP which both had existing fixed film treatment processes and made it a simple transition to upgrading to the MBBR process. The system is designed at a maximum month flow rate of 10.5 mgd to meet < 10 mg/L TN year round. Mr. Johnson was the lead process design engineer on the project as World Water Works was selected as the technology supplier for the project.

Field Point WWTP, Providence, RI. Lead Process Design and Mechanical Engineer. This was the largest IFAS project in the world (77 mgd) . The IFAS concept allowed the facility to take their existing tankage (which was designed only for BOD and TSS removal) and convert it into a Nitrogen Removal system using the IFAS treatment technology.

Blue Plains WWTP, DC Water, Washington DC. Process Design Engineer. Mr. Johnson assisted in the design and procurement of the Filtrate Treatment Facility using the Demon® process along with Dr. Bernhard Wett and Dr. Geert Nyhuis. The 18 month long design process required teaming

with client, design engineer and review engineer on all aspects of the technology and incorporation of all the necessary equipment components required for the entire treatment system.

James River TP, HRSD, Newport News, VA. Process Design Engineer. Mr. Johnson was the lead process and mechanical design engineer for the IFAS demonstration upgrade at the James River WWTP in 2007. The successful implementation of the IFAS concept at the James River WWTP showcased the ability of the plant to utilize the existing treatment volume while treating more volume and meet new nutrient limits. The facility ultimately upgraded the entire facility with the IFAS process based on the successful demonstration project.

South Adams County WWTP, Commerce City, CO and Crow Creek WWTP, Cheyenne, WY. Process Design Engineer. Mr. Johnson was the lead process and mechanical design engineer for these two (2) MBBR projects where were installed in 2003 and 2005. Both systems meet nitrogen removal requirements and have operated to their design requirements as well as having very little to no maintenance requirements on the components (aeration system, sieve assemblies, media). These projects will allow for minimal operator attention and maintenance during the life of the process.

Lakeisha Gammage, CHST
Regional Safety Manager

Firm PC Construction	Registration/ Certifications and Training Construction Safety and Health Technician	Relevant Experience & Benefits <ul style="list-style-type: none"> • Thorough knowledge of construction techniques, methods and safety • Demonstrated ability to communicate effectively with laborers and craftworkers
Industry Tenure 7 years		
Education MS, Occupational Safety Management BS, Criminal Justice		

As regional safety manager, Ms. Gammage is responsible for project implementation of PC’s “Zero Accidents—No Excuses” philosophy in the Southeast United States. Working with the project team, she promotes and creates a safe working environment and ensures associated public safety protocols are met.

Ms. Gammage is an integral part of safety-related training and education initiatives. She applies her extensive experience by assisting the project team in the development and administration of a site-specific safety program as well as pre-task planning for upcoming work. Her proactive approach and active involvement is invaluable to a safe and successful project.

Select Project Experience

Main Process Train, DC Water, Washington, DC. Regional Safety Engineer. Design-Build Joint Venture. Project Value: \$210.3 million.

Northeast WWTP Improvements, City of Hickory, Hickory, NC. Safety Engineer. Project Value: \$22.2 million.

Yellow River Water Reclamation Facility Improvements, Gwinnett County Department of Public Utilities, Lilburn, GA. Safety Engineer. CM-at-Risk. Project Value: \$238.3 million.

Abingdon WTP Expansion, Harford County Department of Public Works, Abingdon, MD. Regional Safety Engineer. Project Value: \$62.8 million.

R.A. Thomas WTP Improvements, Winston-Salem/Forsyth County Utility Commission, Winston-Salem, NC. Safety Engineer. Project Value: \$56.3 million.

Rocky River WWTP Phase I Expansion, Mooresville, NC. Safety Engineer. Project Value: \$10.7 million.

H.L. Mooney Water Reclamation Facility Expansion and Upgrade Stage 2 Phase 1, Woodbridge, VA. Safety Engineer. Design-Build. Project Value: \$118.8 million.

ATP Expansion Phase 1 Contract C, Hampton Roads Sanitation District, Virginia Beach, VA. Safety Engineer. Project Value: \$164 million.

Neuse Regional WTP, Neuse Regional Water and Sewer Authority, LaGrange, NC. Safety Engineer. Project Value: \$61.4 million.

Paul Von Bernewitz

Construction Quality Control

<u>Firm</u>	<u>Registration/ Certifications and Training</u>	<u>Relevant Experience & Benefits</u>
PC Construction	GSWCC Level 1A Erosion Control Certified	<ul style="list-style-type: none"> • Experience in environmental and general civil engineering • Extensive project management and contractor quality control programs experience
<u>Industry Tenure</u> 43 years	OSHA 10-hour	
<u>Education</u> Lynchburg College SUNY at Farmingdale	First Aid/CPR and AED Field training: confined space	

Mr. Von Bernewitz has extensive experience in environmental and general civil engineering and construction, with a focus on project management and contractor quality control programs. His background in engineering analysis and design, and his ability to impact system improvements and quality control strategy results in a high quality construction project. With a thorough understanding of the water and wastewater treatment market and hands-on experience with project administration, Mr. Von Bernewitz adds insight to the quality control process to ensure project goals are achieved. As a quality control representative, he is responsible for the development and implementation of quality assurance and control programs and tracking construction quality from inception to final completion.

Select Project Experience

Tupelo Bayou WWTP Improvements, Conway Corporation, Conway, AR. Quality Control Representative. Project Value: \$66.3 million.

Yellow River Water Reclamation Facility Improvements, Gwinnett County Department of Public Utilities, Lilburn, GA. Quality Control Representative. CM-at-Risk. Project Value: \$238.3 million.

Linwood Water Reclamation Facility Upgrade and Expansion, City of Gainesville, Gainesville, GA. Chief Field Engineer. Project Value: \$46.7 million.

Shoal Creek Filter Plant, Gwinnett County Department of Public Utilities, Buford, GA. Chief Field Engineer. Joint Venture. Project Value: \$102 million.

RM Clayton Water Reclamation Center Expansion, City of Atlanta, Atlanta, GA. Chief Field Engineer. Joint Venture. Project Value: \$115.4 million.

Forsyth County WTP, Forsyth County Water and Sewer Department, Cumming, GA. Field Engineer. Design-Build. Project Value: \$11.5 million.

Management Approach
Organization and Structure

Project Leadership

HNP will provide for the design and construction of the Hopewell Regional Wastewater Treatment Facility Alternative 4A-1 Light, Phase 2 Improvements (Phase 2 Improvements or project). HNP is an integrated design-build team that will provide turn-key design and construction for the Phase 2 Improvements.

Bob Huie | Design-Build Project Manager

Mr. Huie will be responsible to lead the design and construction team for the successful design-build delivery of the project, including:

- Development of the work plan
- Risk Management
- Schedule development and milestones
- Procurement strategy
- Staff performance
- Meeting or exceeding quality expectations



Bill M’Coy | Design and Client Service Manager

Mr. M’Coy will assist Mr. Huie to ensure the design and construction teams are integrated. His responsibilities include:

- Lead the HNP design team through design and construction
- Cultivate a collaborative decision making process during design
- Facilitate design phase meetings and workshops
- Provide continuity from pilot testing/PER to design and construction
- Ensure the Client’s expectations for the project are continually being met



Design Team

This technically complex project benefits from a well-rounded team of engineers and constructors with HRWTF experience. Our design team has worked together on complex wastewater treatment plant projects including HRWTF Phase 1 Improvements, HRSD’s Atlantic Treatment Plant Expansion Phase I, HRSD’s Army Base Treatment Plant Phase III Improvements, and HRSD’s Virginia Initiative Plant Nutrient Reduction Improvements. Based in Norfolk, our design team’s established working relationships coupled with our HRWTF knowledge allows us to help you identify, plan for, and solve this project’s challenges.

Management Approach Table of Contents

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- Design Team
- Key Technology Providers
- Other Subcontractors

Project Delivery Processpage 37

- Collaboration Communication and Integration
- Project Controls
- Maintenance of Plant Operations (MOPO)
- Proposed Schedule

Quality Assurance and Quality Controlpage 41

Key Technology Providers

Key participants and technology providers for the Phase 2 project are WWW and Heyward. WWW is a leading manufacturer and developer of wastewater treatment equipment and technology. As an integral part of the project, WWW will provide the MBBR equipment, media and ancillary devices required to make this a successful project. WWW will be an integrated HNP team member and will provide specialized technical support for the systems and process they will be furnishing for the project. Heyward will also provide support and technical expertise to the project. They are a local equipment representative that is familiar with the plant and plant staff and thus will be an important member in supporting the team with their experience and knowledge.

Other Subcontractors

HNP realizes the importance of participation of local subcontractors and suppliers for this project to provide a positive impact within the local economy. We have worked with many local subcontractors on other projects in the area and will solicit pricing from qualified firms during the preconstruction phase of the project. It is too early at this stage to make any firm commitments due to the level of design detail and the amount of time required for the procurement process; however the HNP will involve the City of Hopewell and other stakeholders during the process to ensure you receive the best value and highest quality for your project.



HNP PROJECT LEADERSHIP (HDR AND PC) Bob Huie, Design-Build Project Manager Bill M'Coy, Design/Client Service Manager	
<i>Responsibilities</i> <ul style="list-style-type: none"> Lead the HNP team throughout project design, construction, and start-up Engage stakeholders throughout the process Provide a collaborative decision making process 	<i>Benefits to the City of Hopewell</i> <ul style="list-style-type: none"> Clear project leadership team with a single-point of contact Design-Build Project Manager for design and construction Demonstrated experience with large wastewater projects requiring careful scheduling of construction activities to minimize impact to ongoing operations Allows Hopewell to leverage the specific knowledge the HNP team has from previous work at the HRWTF
Tony Sneed, Project Executive Jeff Garner, Project Executive	
<i>Responsibilities</i> <ul style="list-style-type: none"> Execute comprehensive agreement on behalf of HNP Ensure proper resources are in place to execute project 	<i>Benefits to the City of Hopewell</i> <ul style="list-style-type: none"> Project Manager is given broad autonomy to make project decisions by Project Executives HNP has ample resources to complete the project within an accelerated schedule



DESIGN Bill M'Coy	<i>Responsibilities</i> <ul style="list-style-type: none"> Deliver overall design HRWTF point of contact during the design development Facilitate design workshops Along with Bob Huie, integrate the design and construction teams 	<i>Benefits to the City of Hopewell</i> <ul style="list-style-type: none"> HNP's design lead and established project team allows Hopewell to leverage the investment already made in HNP staff's knowledge of your facilities, personnel, and preferences Trusted design leadership necessary to communicate, lead large teams, and generate collaborative solutions
KEY TECHNOLOGY PROVIDER Dan Dair	<i>Responsibilities</i> <ul style="list-style-type: none"> Provide input into the process/mechanical design Supply MBBR equipment, media, and ancillary devices Provide technical and commissioning support Provide MBBR process performance guarantee 	<i>Benefits to the City of Hopewell</i> <ul style="list-style-type: none"> Utilizing WWW MBBR equipment provides HRWTF staff a high level of comfort and reliability Proven process through pilot testing Pre-imminent industry knowledge and experience in successful application of MBBR technology for industrial and municipal wastewater
KEY TECHNOLOGY PROVIDER John Seaman	<i>Responsibilities</i> <ul style="list-style-type: none"> Technical advisor for installation, startup and training for the MBBR System and ancillary process equipment Facilitate procurement of MBBR screens, secondary clarifier collectors, chemical feed system, and static aerators to match existing equipment 	<i>Benefits to the City of Hopewell</i> <ul style="list-style-type: none"> Worked with HRWTF since 1977 Knowledge of HRWTF treatment process and plant equipment Experience with MBBR equipment installations Keeps capital dollars in the local community Expands local firm experience with design-build delivery
SUB/SUPPLIER COORDINATION Bob Huie and Glenn Barin	<i>Responsibilities</i> <ul style="list-style-type: none"> Prequalify local and specialty subcontractors Identify meaningful opportunities for local subcontractors to participate in the project 	<i>Benefits to the City of Hopewell</i> <ul style="list-style-type: none"> Best value and highest quality subcontractors are selected Keeps payroll dollars local, supports the local economy

Project Delivery Process

Upon selection for the Phase 2 Improvements, HNP pledges to implement the same procedures and collaboration that we have successfully used for our other large wastewater treatment nutrient removal projects. Our delivery process and structure are based on selecting the most qualified team members who will collaboratively perform the work and maintain engagement of all stakeholders throughout the delivery process.

Collaboration, Communication, and Integration

The design-build delivery method offers the best opportunity to integrate the talents of a world class constructor with a world class designer along with the owner’s team. HNP will begin the project by confirming our understanding of the project goals and objectives. During the design phase of the project, HNP will identify the procedures to assure that all stakeholders are included in all critical design, value engineering, and constructability decisions that evolve during project execution.

Using the work completed during the PER process, HNP will prepare a detailed design strategy that fully defines the scope of the project, the design effort, and will conduct further design workshops with stakeholders, as appropriate, to confirm the effectiveness of our approach and understanding of your project goals. In consultation with the stakeholders, design will proceed through close collaboration with engineering, construction and operations professionals. This assures cost control, constructability, scheduling, and safety considerations are incorporated into the design as it is progressed.

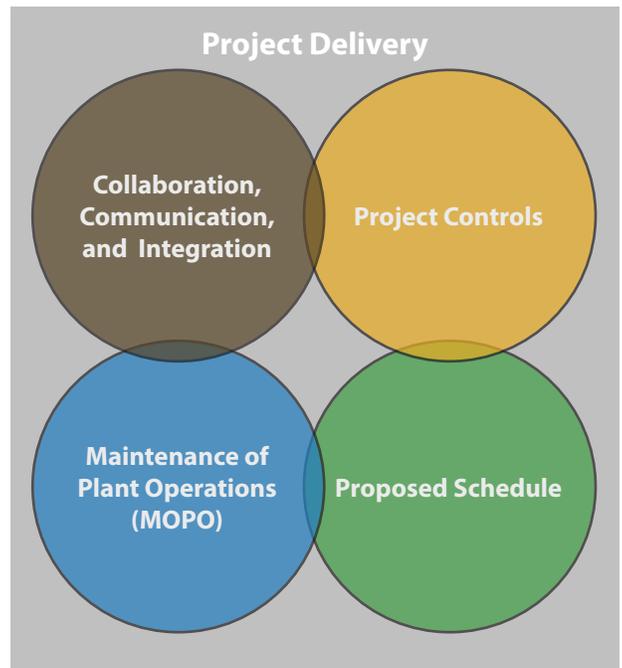
During the development of the design submittals, the team will consult regularly with HRWTF staff and other project stakeholders. HNP will provide all essential information to allow effective participation in key decisions and understanding of work sequence and integration with operations staff required during construction.

Simultaneous to the design submittals, the HNP team will consult with regulatory authorities to affirm a clear understanding of the regulatory permitting process while defining clear responsibilities for HNP and the City of Hopewell.

Collaboration, communication, and decision making will be accomplished through regularly scheduled meetings, focused meetings, and formal workshops. Table 1-1 on the following page summarizes HNP’s proposed meetings and workshops.

HNP Project Delivery Benefits to the City of Hopewell:

- Increased collaboration between Hopewell and the design-build team
- Single point of contractual responsibility
- Integration of a design and construction team who know HRWTF
- Early knowledge of total cost and budget control
- Cost certainty through concurrent design and estimating
- Schedule acceleration



Our Project Delivery Process involves four major elements

Table 1-1 Proposed Meetings and Workshops

	Meeting/Workshop Title	Expected Outcome	
Design Preconstruction	Design / Preconstruction Kick-off	<ul style="list-style-type: none"> Confirmed project goals and objectives Defined work plan Clear communication plan Completed review of PPEA design and cost estimate Confirmed design criteria and assumptions Clear understanding of design boundaries Plan to mitigate risk for priority items 	
	Monthly Progress	<ul style="list-style-type: none"> Completed schedule review Updated schedule Updated progress report Identification and progress of action items 	
	30% Design Review	<ul style="list-style-type: none"> Team agreement on design concepts 	
	Value Engineering*	<ul style="list-style-type: none"> Team agreement on implementing value engineering concepts and ideas 	
	30% Functional Description Review	<ul style="list-style-type: none"> Team agreement on process control approaches 	
	60% Design Review	<ul style="list-style-type: none"> Team agreement on design and total project costs 	
	60% Functional Description Review	<ul style="list-style-type: none"> Final functional descriptions and P&IDs 	
	Maintenance of Plant Operations (MOPO)/Startup/Conversion Requirements	<ul style="list-style-type: none"> Agreement on specific project requirements for MOPO and process conversion 	
	Construction	Construction Kick-off	<ul style="list-style-type: none"> Updated defined work plan Updated clear communication plan
		95% Design	<ul style="list-style-type: none"> Team agreement on design and total project cost
"What if" Modeling		<ul style="list-style-type: none"> Identify impact of alternative approaches to work 	
Weekly Coordination and Scheduling Meetings with Design Team and Subcontractors		<ul style="list-style-type: none"> Completed schedule review Updated schedule Updated progress report Coordination of issue resolution Distribution of expediting logs that tract the manufacturer and delivery of critical materials 	
Weekly Superintendent Meeting		<ul style="list-style-type: none"> Completed review of superintendent's three-week look-ahead schedules 	
Maintenance of Plant Operations (MOPO)		<ul style="list-style-type: none"> Clearly defined restrictions and plan 	
Electrical Instrumentation and Controls Integration		<ul style="list-style-type: none"> Clearly defined integration plan 	
Startup/Testing/Training		<ul style="list-style-type: none"> Detailed startup and process conversion plan 	
Project Closeout		<ul style="list-style-type: none"> Identify early punchlist items Establish schedule for weekly close-out coordination meetings 	

* Value Engineering per VDEQ grant and loan funding requirements

Project Controls

A project guide and work plan will be developed at the start of the project to establish the guidelines and controls for executing the project. The Project Guide communicates essential information about the project to all involved, including project requirements and objectives, personnel responsibilities, communication information and protocols, and electronic filing structures. It provides marching orders for the team and paves the way to successful project completion and accountability.

We will use ProjectWise as the document management system for all working and final design documents. The City of Hopewell will be provided access to ProjectWise if desired; however, a web-based SharePoint site will also be developed to post milestone documents of interest. Milestone folders will be set up for the final deliverable documents so that each phase of the project documents will be clear to the reviewer.

A design comment spreadsheet will be used to document design review comments, concerns, alternatives to be explored, and the responses and decisions made for each of these items. The spreadsheet will provide a record of all comments received and their resolution so that all stakeholders will be able to confirm their concerns were addressed.

Maintenance of Plant Operations (MOPO)

Working on an existing, operational wastewater treatment plant requires extensive planning by the team to prepare for the work ahead. Early in the design phase the HNP team will access HRWTF’s plant operations, determine where underground utilities are located and share this information with the design team. This will allow design and construction efforts to properly plan and execute the work required to incorporate the new facilities into the overall plant.

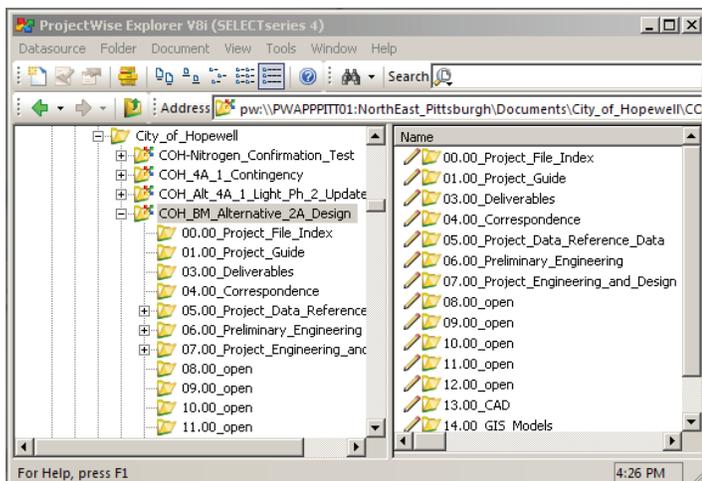
Our team also understands the importance of properly maintaining plant operations in the midst of completing complex shut-downs, bypasses and hot-taps within a scheduled time frame with no permit violations. We will achieve this by employing our comprehensive understanding of the treatment plant processes to develop a detailed maintenance of plant operations plan which provides a descriptive methodology for maintaining plant operations. This plan will be reviewed with the entire team and plant operators to ensure we have the resources in place to complete the work as planned. We will also develop contingency plans outlining equipment and resource needs to mitigate any potential risk associated with performing the work. When it comes to constructing, upgrading and expanding water and wastewater treatment plants – we get it and we get it done.

ProjectWise

- ProjectWise will be used as the document management system for the project with access provided to the City of Hopewell

HNP MOPO Benefits to the City of Hopewell:

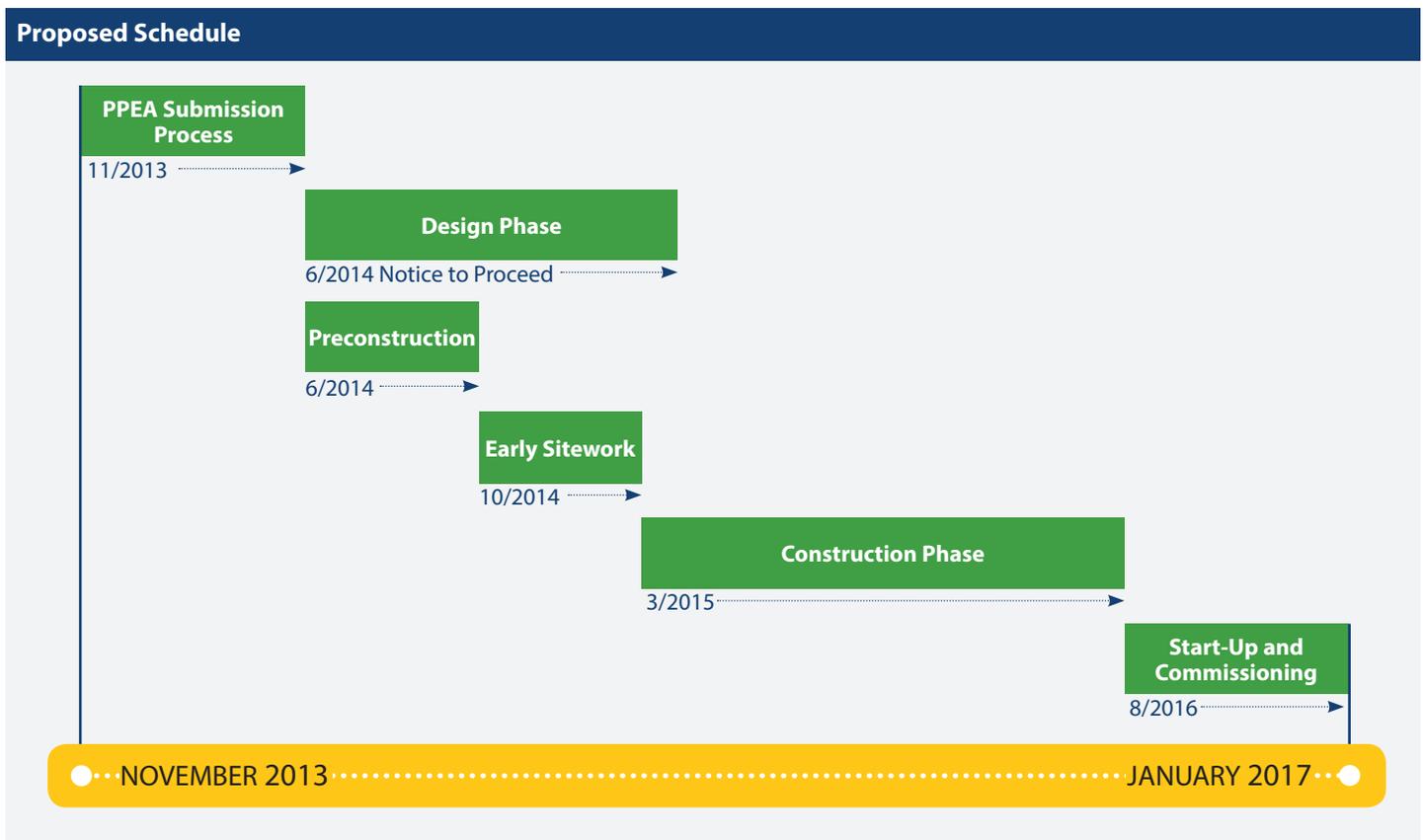
- No unplanned interruptions to HRWTF operations
- Continued, consistent permit compliance



Proposed Schedule

HNP has developed a schedule to design and construct this project in 31 months from the Notice to Proceed. Our schedule outlines the plan to execute the major and sub tasks required to construct the project. We have identified the work activities and tasks we believe are critical to the success of the project: This plan provides a starting point for the team to plan and execute the design, permitting and construction of the project. HNP will utilize the work completed during the PER process and overlap design and construction in an efficient manner thereby completing the project as presented in the schedule. We propose that the City of Hopewell consider starting early procurement and site development construction activities as the design of the project progresses. This will allow the project to integrate the best efforts of the design and the construction team for the benefit of the overall project. Once the approval of the design is complete and the permitting is in place we will proceed immediately with construction.

A schedule summary outlining all major schedule milestones can be found in Volume I, Section 2f; however, to view a more detailed schedule, please reference Volume II, Section 2f.



Quality Assurance and Quality Control

HNP services will be based on sound principles meeting the standards of professional practice and satisfying quality requirements. We will distribute the project quality plan (PQP) at each of the kick-off meetings to all team members including field inspection staff, subcontractors, and subconsultants. All project team members will be required to use the QC production and review procedures described in the PQP. Our Quality Advisory Committee will perform QC audits at key project milestones to ensure the PQP is being followed.

Design Phase Controls

The design portion of our PQP is practiced in three phases:

Phase I, Project Initiation

our team’s project initiation phase begins with the preparation of a project guide. The project guide is a communication tool used to inform the team of pertinent information.

Phase II, Design Execution

our team’s design execution phase begins with a team kick-off meeting. Our Design Manager, Bill M’Coy, oversees the execution and development of the deliverables, communicates with Hopewell and the team and documents the progress and decisions made during the design development.

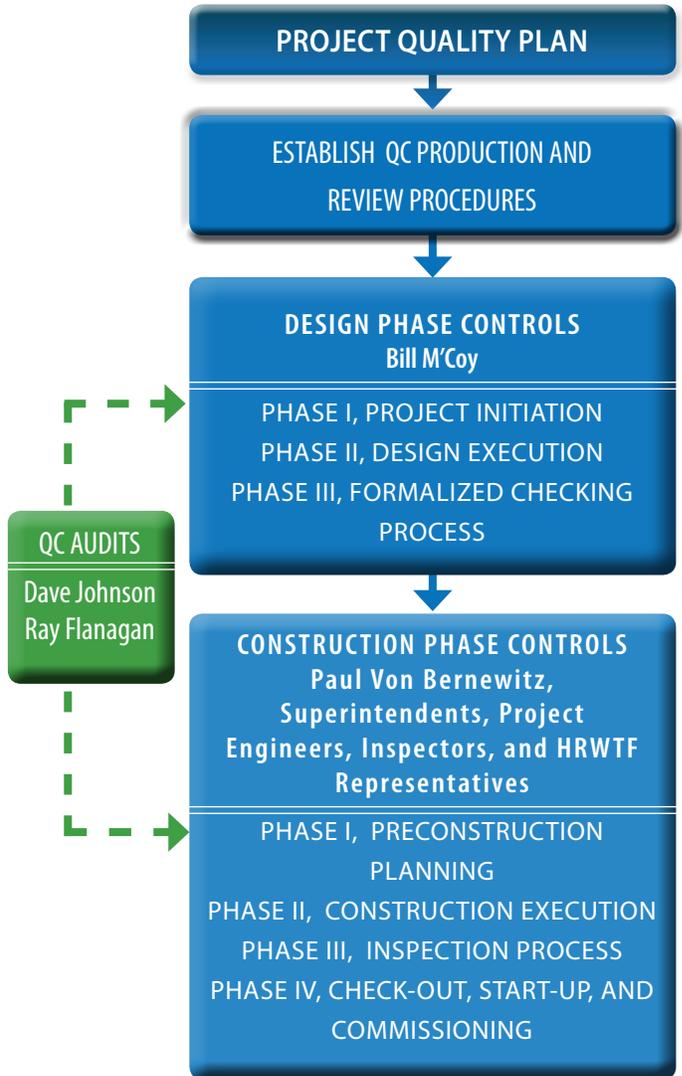
Phase III, Formalized Checking Process

our team’s formalized checking process begins when the plans or documents are production ready.

All deliverables including plans, calculations, reports, studies, quantities and cost estimates undergo a detailed QC review prior to submittal to Hopewell. Bill M’Coy will oversee the formalized checking process to ensure the procedures defined in the PQP are implemented.

Quality Is “Built In, Not Inspected In”

- HNP believes quality work is achieved through a combination of quality design, an effective work plan, having all the tools and equipment necessary to perform the work, communicating the quality standards to every member of the team, and establishing the appropriate criteria against which to measure the quality of the work.



Our PQP will integrate all elements of the design-build process by including both design and construction professionals in the quality process throughout the entire project.

Construction Phase Controls

The construction portion of our PQP is also practiced in three phases. We will implement the phases listed below on each task assigned under this contract:

Phase I, Preconstruction Planning

Prior to starting construction in a new work area, a preconstruction planning meeting will be held. Included in this meeting will be Paul Von Bernewitz, the appropriate superintendent(s), project engineer(s), inspector(s), and HRWTF representative(s). The team will discuss items such as safety, schedule, required outages, material delivery, and MOPO. Required submittal drawings and “For Construction” drawings will be compared with the field and production drawings to confirm completeness and accuracy.

Phase II, Construction Execution

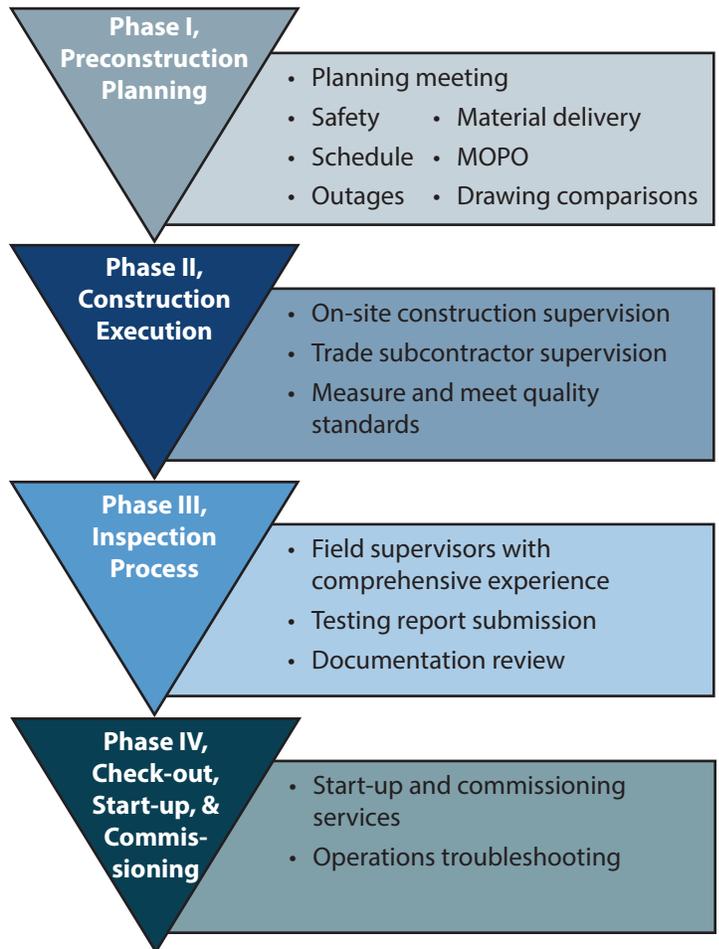
Construction Quality Control lead Paul Von Bernewitz and our other on-site construction supervision will meet the quality standards developed as part of the design documents and will ensure the performance of our trade subcontractors meet the same standards.

Phase III, Inspection Process

HNP’s unique strength is the ability to provide field supervisors who offer comprehensive construction experience, as opposed to mere “inspection services.” As key members of the Project Management team, these field supervisors provide in-depth knowledge of construction means, methods, and QC procedures. The QC Plan will require the submission of inspection and testing reports and documentation as needed to satisfy the project criteria. Our construction team will review the documentation with the HRWTF staff and design team as applicable to confirm that the quality requirements are being met as expected. Where work does not meet quality requirements, procedures will dictate documentation of re-work and re-testing until the work is acceptable and approved. HNP will carefully audit the documentation of all re-testing to be sure that the work meets all standards prior to the official final inspection.

Phase IV, Check-out, Start-up, and Commissioning

For Phase IV, Chris Malinowski and Bob Bower will oversee the execution of check-out, start-up, and commissioning.



HNP’s Construction Phase Controls are applied in four phases.

1b. Experience

Describe the experience of the private entity making the proposal and the key principals involved in the proposed project including experience with projects of comparable size and complexity, including prior experience bringing similar projects to completion on budget and in compliance with design, land use, service and other standards. Describe the length of time in business, business experience, public sector experience and other engagements of the private entity. Describe the past safety performance record and current safety capabilities of the private entity. Describe the past technical performance history on recent projects of comparable size and complexity, including disclosure of any legal claims by or against the private entity. Include the identity of any private entity that will provide design, construction and completion guarantees and warranties and a description of such guarantees and warranties.

Project Team Experience

HNP is a single purpose entity that has been formed specifically for the Phase 2 Improvements project. As such, HNP cannot claim any past experience; however, its two partners, HDR and PC, do have significant, shared experience between its personnel and relevant projects. Because of our partner companies' shared history of successfully completing multiple projects similar to the City of Hopewell's project, we believe HNP is the most qualified team to design and construct this highly complex project in the most expeditious and economical manner. In addition, HNP's exclusive technology providers, WWW and Heyward, add strong wastewater treatment expertise to our team.

HDR

Managing partner, HDRC, is a wholly owned subsidiary of HDR, Inc. HDR, Inc. was founded in 1917 and is a global employee-owned firm providing architecture, engineering, consulting, construction and related services through various operating companies. Our professionals are committed to helping clients manage complex projects and make sound decisions. HDR has six offices in Virginia and has been part of the Virginia business landscape since 1969 when it opened its Alexandria office. Today, more than 300 Virginia-based HDR professionals offer a full range of architecture, engineering and construction services to government, institutional and private sector clients.

HDR's integrated design-build approach is focused on making projects simpler, faster and more efficient for our clients by assembling the right team and the right plan for the project. Our experts in design-build project management, construction, procurement, estimating, accounting, financing, and project controls assist clients

in selecting the most effective path forward to ensure that their project is done on-time and within budget. This collaborative approach offers clients the ability to design, manage and construct projects in the most efficient, effective manner.

Key Principal/Executive

Anthony Snead, Vice President: Mr. Snead has nearly 40 years of industry experience and specializes in design-build project delivery for water and wastewater facilities. Over the last 20 years, he has managed diverse and complex projects with a combined value of more than \$500 million for both private and public sector clients. Mr. Snead's extensive design-build project management background includes multiple WWTP projects involving upgrades to primary and secondary (nitrification/denitrification) systems, tertiary upgrades to Title 22 standards, control system upgrades, equalization/emergency storage, solids handling improvements, pump stations, and cogeneration. He has diverse experience overseeing an integrated multi-disciplinary team of design engineers, construction managers/schedulers, contractors, and construction subcontractors.



Comparable Projects

HDR has included project descriptions on page 46.

Safety Performance Record/Current Safety Capabilities

Please refer to Volume II, Section 1h for this information.

Legal Claims

For the aforementioned comparable projects, no known legal claims have been made at the time of this submission. Please refer to Volume II, Section 1h for additional information regarding legal claims.

PC Construction

PC provides professional, client-focused construction solutions. As an employee-owned company, PC goes above and beyond on every project and delivers on promises with integrity.

PC shares more than a half of a century of industry-leading excellence with every client they meet. PC offers general contracting, construction management, design-build, and preconstruction planning services for projects of all sizes.

Founded in 1958, PC is one of the nation's largest employee-owned contractors with corporate offices in Vermont, regional offices in Maine and North Carolina, and construction projects spanning the east coast. PC's five-year average annual volume of over \$450 million includes extensive work in each of our primary markets of water treatment, commercial, education and campus, health care, hospitality and resort and manufacturing and industrial.

PC is a 100 percent employee-owned company whose daily actions are guided by core values. Our commitment to outstanding job completion, exceptional customer service and superior safety performance has made us a partner of choice in the construction industry.

PC's 900 employees come from every craft and expertise in the field, allowing us to combine innovative construction methods and accountable project management to get the job done, and to get it done right.

Key Principal/Executive

Jeffrey Garner, PE, LEED AP, Senior

Vice President: Mr. Garner has more than 26 years of engineering and construction industry experience, the past 14 years of which with PC Construction. He has held a number of positions with increasing levels of responsibility throughout his career progressing from engineering, design, and field supervision, to overall management of projects for energy, advanced manufacturing, heavy industrial and municipal clients. Mr. Garner has successfully managed multiple large-scale projects across the United States including design-build projects and multi-site programs



requiring careful coordination and sequencing of all construction activities, many of which involved highly complex mechanical systems.

While in operations at PC, Mr. Garner managed work totaling more than \$520 million for both public and private clients spanning all project delivery methods. He has managed several departments within PC including the company's overall estimating and preconstruction efforts. Mr. Garner is adept at developing innovative solutions, guiding vendor and subcontractor negotiations, owner relations and safety. His experience on both sides of construction – preconstruction and project management – brings the highest level of construction expertise and management skill to his teams.

As senior vice president, Mr. Garner provides executive leadership for PC's Water/Wastewater Treatment business segment including business development, estimating, and all field operations activities as well as applicable components of PC's business and strategic planning. As a member of the company's Executive Committee, he fulfills an important role in the development and implementation of our strategic plan.

Comparable Projects

PC has included project descriptions starting on page 55.

Safety Performance Record/Current Safety Capabilities

Please refer to Volume II, Section 1h for this information.

Legal Claims

For the aforementioned comparable projects, no known legal claims have been made at the time of this submission. Please refer to Volume II, Section 1h for additional information regarding legal claims.

Guarantees/Warranties

Please refer to Volume II, Section 1b for this information.

Comparable Projects

The highlighted projects on the following pages were selected based on similar characteristics to the Phase 2 Improvements project. Similarities may include delivery method, project complexity, dollar value, and/or comparable technologies or equipment. Please refer to the project sheets included in this section for further details.

HRWTF Alt. 4A-1 Light Phase 1, Contract No. 1, 2, and 3

Hopewell, VA

<p>Project Owner City of Hopewell (HRWTF)</p> <p>HNP Firm Member(s) Involved</p> <ul style="list-style-type: none"> • HDR (design: All contracts) • PC (construction: Contract 1 only) • Heyward (equipment supplier: Contract 1 only) 	<p>Size of Facility 50 mgd</p> <p>Total Project Value \$19 million</p> <p>Completion Date 2012</p>	<p>Technical Elements/Relevance</p> <ul style="list-style-type: none"> • Segregated treatment system set the stage for Phase 2 Improvements, which will allow the plant to efficiently send wastewater through a nutrient removal process, meeting nutrient reduction objectives
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Project Description

The key objective of Contract 1 (Relocation of Domestic Treatment) was to provide segregated preliminary treatment, primary treatment, and disinfection of domestic wastewater at the Regional plant at the projected 2015 flows and loads. Two key factors drove the need for this work. First, the projected domestic loads exceed the available capacity of the Primary Plant, and due to its condition and satellite location, the City of Hopewell can streamline operations and reduce costs by combining treatment at the Regional Plant. Second, because the combined industrial stream is inhibitory to nitrification, separation of the streams is required so that the facility can ultimately nitrify (planned under Phase 2 Improvements to comply with new VPDES permit requirements).

Specific elements within Contract 1 include the following:

- Domestic Preliminary Treatment Facility including mechanical screens, grit removal, and grit washing and compacting units
- Septage receiving facility
- Sodium hypochlorite storage and feed facility
- Conversion of existing rectangular primary clarifiers to combination clarifier/chlorine contact tanks
- Dewatering pad and dumpster storage area
- Replacement of non-potable water pumps
- Mechanical screens for industrial influent

In Contract 2, HDR designed new First Street Pump Station to 15 mgd and Bailey’s Creek Pump Station to 17 mgd. Replacements included constructing two new submersible, self-cleaning pump stations with influent channel grinders, valve vaults and magnetic flow meter vaults.

In Contract 3, HDR designed a new industrial wastewater force main to allow segregation of the domestic and industrial wastewaters.



New Preliminary Treatment Facility (PTF)



Close-up of the new PTF



Three primary clarifiers were converted

Atlantic Treatment Plant Expansion Phase I, Contract C Virginia Beach, VA

<p>Project Owner Hampton Roads Sanitation District (HRSD)</p> <p>HNP Firm Member(s) Involved</p> <ul style="list-style-type: none"> • HDR (design) • PC (construction) 	<p>Size of Facility 54 mgd</p> <p>Total Project Value \$164 million</p> <p>Completion Date 2013</p>	<p>Technical Elements/Relevance</p> <ul style="list-style-type: none"> • HDR and PC worked together for all construction phase services included under this extended contract • Innovative site preparation plan saved HRSD \$25 million • Helped HRSD obtain state funding for CHP system
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Project Description

HRSD needed to expand the 36 mgd Atlantic Treatment Plant (ATP) to 54 mgd capacity. As part of the preliminary design phase, HDR evaluated concepts that would provide lowest life-cycle costs and improved service. Increasing the efficiency of the solids handling system was a priority. Further, HDR developed design plans to convert the existing digesters into a two-stage acid-phase digestion system. The digestion process increases volatile solids reduction by 10 percent, saving more than \$150,000 annually in land application and dewatering chemical costs. Working with HRSD, HDR relocated the centrifuges to a new building adjacent to the cake storage pad. A labor-intensive dewatered cake handling system was eliminated saving HRSD more than \$350,000 in annual O&M costs.

Part of the planning process included applying for funding from the Virginia Wastewater Revolving Loan Fund. As part of the application process, an environmental assessment of the proposed project area was required. HDR coordinated the wetland delineations and cultural resource surveys needed and prepared a final report detailing the potential impacts of the project.

As part of the preliminary engineering phase, HDR evaluated alternative expansion concepts that would provide lowest life-cycle costs and improved service to HRSD. PC construction work included:

- A blower and electrical building, dewatering building, digested solids storage tank pump station, acid phase digester, odor control station, plant drain pump station, primary treatment facility, solids handling building and cake storage pad
- Multiple aeration tanks, chlorine contact tanks, primary clarifiers, secondary clarifiers
- Miscellaneous distribution boxes and ancillary facilities
- Self-performance of 70 percent of contract value by PC
- Modifications and upgrades to existing chlorine contact tanks, effluent pump station, primary clarifiers, digesters, solids handling and generator room
- Extensive odor control system with over 7,600 linear feet of fiberglass reinforced plastic pipe ranging in size from 6 inches to 96 inches in diameter
- Rehabilitation of the plant's four existing secondary clarifiers; each 160 feet in diameter with Siemens clarifier equipment and Warminster fiberglass weirs, baffles and troughs

Construction of a new combined heat and power (CHP) system to capture and clean the digester biogas was completed in 2013. The biogas fuels new internal combustion engine generators for power production and heat recovery for digester and building heating. Unconventional anaerobic digestion has positioned ATP for more cost-effective and efficient solids handling, renewable energy production, energy efficiency, and reduced environmental impacts. Based on design flow and estimated gas production, the installation includes 2.2 MW of generation capacity with two digester gas-rated 1,100 kW generators.



HRSD's Atlantic Treatment Plant



CHP system generators

Army Base Treatment Plant Improvements Phase III

Norfolk, VA

Project Owner HRSD	Size of Facility 18 mgd	Technical Elements/Relevance <ul style="list-style-type: none"> • Design Limits: TN 3.0 mg/L, TP 0.3 mg/L • ENR upgrade of an existing WWTP • Preliminary treatment upgrades • Retrofit of aeration tanks • Stringent MOPO requirements
HNP Firm Member(s) Involved <ul style="list-style-type: none"> • HDR (design) 	Total Project Value \$106 million	
	Completion Date Estimated 2014	

Project Description

HDR was selected by the Hampton Roads Sanitation District (HRSD) to provide planning, design and construction phase services for the upgrade of the 18 mgd Army Base Treatment Plant in Norfolk, VA. The Army Base Treatment Plant Phase III upgrade includes enhanced nutrient removal and ancillary plant improvements at a construction cost of \$85 million. The project is complicated by a congested site that must accommodate additional treatment processes, while maintaining plant operations and providing adequate construction space.

The Army Base Treatment Plant is a secondary treatment facility that was last expanded in the late 1970s. As part of HRSD's plan to meet a new waste load allocation for nitrogen and phosphorus, the Army Base Treatment Plant will be upgraded to meet an annual average effluent limit of 5 mg/L total nitrogen and 1 mg/L total phosphorus. The upgrade has been designed for the addition of methanol and/or effluent filters in the future to meet a possible limit of 3 mg/L total nitrogen and 0.3 mg/L total phosphorus.

HDR has completed the detailed design phase for the project and construction is ongoing. The plant improvements include the following key facilities:

- A new preliminary treatment facility that will house fine screens, screening handling and dewatering equipment, raw waste influent pumps and grit removal equipment
- Six million gallons of new biological process tanks for operation of a five-stage nitrification/denitrification process with biological phosphorus removal
- Conversion of the existing aeration tanks to operate in a post-anoxic and re-aeration mode in series with the new biological process tanks
- A new methanol storage and feed facility
- Rehabilitation of the existing four secondary clarifiers and RAS pump station
- Provisions for future construction of effluent filters and pumping
- Rehabilitation of the existing biosolids receiving facility
- Rehabilitation of an existing biosolids holding tank and the construction of a new gravity thickener facility to process primary and waste activated solids.
- A new 25,500 scfm odor control station to serve the preliminary treatment facility
- A new electric generator building and major upgrades to the electrical system
- Installation of a plant-wide Distributed Control System



Fine bubble aeration diffusers



Nitrified Recycle (NRCY) Pump

Virginia Initiative Plant Nutrient Reduction Improvements Norfolk, VA

<u>Project Owner</u> HRSD	<u>Size of Facility</u> 40 mgd	<u>Technical Elements/Relevance</u> <ul style="list-style-type: none"> Design Limits: TN 5.0 mg/L, TP 1.0 mg/L
<u>HNP Firm Member(s) Involved</u> <ul style="list-style-type: none"> HDR (design) PC (construction: Contract A) 	<u>Total Project Value</u> \$120 million	<ul style="list-style-type: none"> Nutrient removal process: 5-stage enhanced biological nutrient removal
	<u>Completion Date</u> Estimated 2017	<ul style="list-style-type: none"> Informed decision making is facilitated through the use of building information modeling and workshops

Project Description

HDR is working with the Hampton Roads Sanitation District (HRSD) to upgrade its 40 mgd Virginia Initiative Plant (VIP). Nutrient reduction improvements are necessary for compliance with near-term and future requirements specified in the Virginia Watershed Implementation Plan (WIP) as part of the Chesapeake Bay TMDL. Challenges include tight site conditions, an aggressive schedule and the need for an operator-friendly design that minimizes chemical and energy use to achieve a low life cycle cost.

HDR is responsible for preliminary engineering, final design, bidding, contract administration, field engineering and inspection, startup and testing, operations and training, and post-startup and certification services. PC is performing early site preparation, installation of pile foundations and replacement of NRCY pumping system.

HDR’s innovative design concept treats peak flows by using a new equalization tank, biological process tank and chlorine contact channel in a “parallel” mode. This concept provides for significant peak flow treatment capacity on the constrained site at an economical cost.

Key design criteria for the nutrient reduction improvements – plant design capacity, effluent nutrient targets and peak hydraulic capacity – were studied in parallel tracks, with integration at key points to provide HRSD with a clear understanding of the marginal cost impacts and trade-offs between each step of increased nutrient reduction and peak hydraulic capacity. Informed decision making is facilitated through the use of building information modeling (BIM) so HRSD staff can better visualize and understand design solutions. A series of interactive workshops further foster HRSD staff involvement in developing and evaluating solutions.

Project Highlights

- Improvements include a preliminary treatment facility (influent screening and pump station), flow equalization tanks, a methanol storage and feed facility, secondary clarifier and a chlorine contact channel.
- The project also includes anoxic recycle (ARCY) and nitrified recycle (NRCY) pump station improvements, biological process tank upgrades for nitrification/denitrification, retrofit of the existing digester for primary solids storage and fermentation, expansion of the plant-wide distributed control system, upgrades to the electrical system, and planning for future effluent denitrification filters and an ultraviolet disinfection facility.
- An innovative, fast-track project delivery approach is being used to resolve issues and minimize risks in order to develop the most effective and efficient solutions while meeting the tight schedule.



Interactive workshop utilizing BIM



BIM modeling

Fort Meade Water and Wastewater Improvements

Fort Meade, MD

<p>Project Owner American Water Military Services</p> <p>HNP Firm Member(s) Involved</p> <ul style="list-style-type: none"> • HDR (design) 	<p>Size of Facility 12.3 mgd (WWTP) 3.3 (WTP)</p> <p>Total Project Value \$57.9 million</p> <p>Completion Date Estimated 2014</p>	<p>Technical Elements/Relevance</p> <ul style="list-style-type: none"> • Integrated design-build project delivery • Design Limits: TN 4.0 mg/L and TP 0.3 mg/L • ENR upgrade of an existing WWTP
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Project Description

Fort George G. Meade is a permanent U.S. Army installation located 24 miles northeast of Washington, D.C. The installation encompasses approximately 5,415 acres and includes both water treatment/distribution and wastewater collection/treatment facilities.

The American Water/Bowen Engineering/HDR team was selected to provide design/build/own/operate services for the water and wastewater systems. HDR's work includes 52 defined projects and services related to capital improvements. The capital improvements are on-going and are being constructed over a three-year period and include:



Ft. Meade water treatment facility

Wastewater Treatment Plant and Collection System

- New fine screens system to improve debris removal upstream of other plant processes
- Retrofit/upgrade the existing activated sludge system by converting to 5-stage Bardenpho ENR system. This system will significantly lower chemical use while meeting the low 4 mg/L total nitrogen and 0.3 mg/L total phosphorus limits
- Added tankage to restore treatment capacity to 4.5 mgd
- Rehabilitation/upgrade of the existing effluent polishing filters to denitrification filters
- Installation of new ultraviolet disinfection facility to replace gaseous chlorine and sulfur dioxide
- A new solids processing system including screw press dewatering and drying for Class A biosolids production
- Rehabilitation of an existing biosolids holding tank and the construction of a new gravity thickener facility to process primary and waste activated solids
- Installation of a plant-wide Distributed Control System
- Pump station upgrades
- Significant sewer and manhole rehabilitation and replacement work throughout the collection system (replacement of over 1,000 building sewer laterals)
- Sewer system extensions to previously unsewered areas

Water Treatment Plant and Distribution System

- Aerator replacement
- Piping improvements (replacing over 60,000 LF of aged water piping, hydrant, valves and services to buildings)
- Filter upgrades
- Hypochlorite system
- High service pump replacement at booster station
- Water line extensions and upgrades (upsizing transmission main)
- New supervisory control and data acquisition (SCADA) system



Ft. Meade Water Treatment Plant

Sanitary Effluent Reclamation Facility (SERF) Expansion Los Alamos, NM

<u>Project Owner</u> U.S. Department of Energy, Los Alamos National Laboratory (LANL), & Los Alamos National Security (LANS)	<u>Size of Facility</u> 0.4 mgd	<u>Technical Elements/Relevance</u> <ul style="list-style-type: none"> • Integrated design-build project delivery • Fast-track schedule completed on-time • Outstanding Safety Performance
<u>HNP Firm Member(s) Involved</u> <ul style="list-style-type: none"> • HDR (design and construction) 	<u>Total Project Value</u> \$11.4 million	
	<u>Completion Date</u> 2012	

Project Description

LANL and LANS discharges more than 175 million gallons of treated wastewater each year through 15 permitted outfalls under its National Pollution Discharge Elimination System (NPDES) permit. In order to meet the NPDES permit’s increasingly strict effluent limitations, LANL contracted with HDR to design and construct upgrades to the existing Sanitary Effluent Reclamation Facility (SERF).

Following project completion in September 2012, HDR’s performance on this project received the highest rating possible, Level 5 – Excellent, in all nine review categories of the LANS Subcontractor Assessment Report.

Under an integrated design-build delivery contract with LANL, HDRC furnished qualified personnel, equipment, materials and all design services necessary to design and construct the expansion of the SERF. This expansion allows LANL to reuse treated wastewater from the Sanitary Wastewater System (SWWS) at an expanded SERF and reusing it at various locations throughout the facility. Cooling towers at the Strategic Computing Complex (SCC) and Laboratory Data Communications Center (LDCC) receive treated effluent from the SERF facility. The SERF facility modifications included design and construction of a new building to house three micro filters and three reverse osmosis (RO) filters to clean up the SWWS effluent to a level that it can be reused. Facility modifications include associated site work and utility upgrades. HDR’s scope of work included the following tasks:



New treatment building



Chris Quartieri, LANL Project Manager, said, “HDR has been very responsive on the SERF project. They have worked diligently to meet our expectations.”

- Expanding SERF to deliver 300 gpm for net processing capacity
- Expanding the treatment capacity of the existing SERF to allow treatment of the cooling tower blow down from the SCC, LDCC and Power Plant
- Installing or modifying piping, lift stations, and/or other appurtenances necessary to convey SERF treated water to the SCC, LDCC and Power Plant and SERF RO reject to the evaporation ponds
- Installing or modifying evaporation ponds to accept SERF RO reject
- Installing necessary influent, effluent, and blow down storage tanks

The facility design began in May 2011 and by working closely with the LANL construction management personnel, HDR completed the project within the 14 month contract time frame. Key to the successful execution of this project was the single-point of responsibility that the integrated HDR team provided. The HDR design and construction team worked closely with the LANL engineers to assure that the project met all of LANL’s rigid requirements for both water treatment standards and construction standards.

Using behavioral-based safety concepts and employing a full-time safety professional on-site, HDR was able to manage 18 subcontractor companies through LANL's stringent safety program. In the short time-period at LANL, a positive safety culture was developed, which was a major reason the project was completed without a single first-aid incident or serious injury. In March 2012, DOE conducted an in-depth safety audit of construction projects at performed at LANL. Of the 12 projects audited, the HDR LANL SERF project was given a first-place ranking on the audit, which reviewed all LANL contractor safety programs currently in place. Additionally, by attending and participating in LANL's monthly safety meetings, HDR was able to assist in improving some of the LANL safety systems.

Following project completion in September 2012, HDRC's performance on this project received the highest rating possible, Level 5 – Excellent, in all nine review categories of the LANS Subcontractor Assessment Report, listed below:

1. Safety Requirements
2. Security Requirements
3. Quality Assurance Requirements
4. Adherence to Schedule
5. Delivery Performance
6. Technical Related Items
7. Cost Management
8. Subcontractor Management/Project Controls
9. Business Related Activities

Edward C. Little Water Recycling Facility, Phase IV Expansion El Segundo, CA

Project Owner West Basin Municipal Water District	Size of Facility 40 mgd	Technical Elements/Relevance <ul style="list-style-type: none"> • Integrated design-build project delivery • Highly complex facility employing advanced treatment technologies to create ultrapure water from poor quality secondary effluent • Stringent MOPO requirements
HNP Firm Member(s) Involved <ul style="list-style-type: none"> • HDR (design and construction as JV partner) 	Total Project Value \$51.7 million	
	Completion Date 2007	

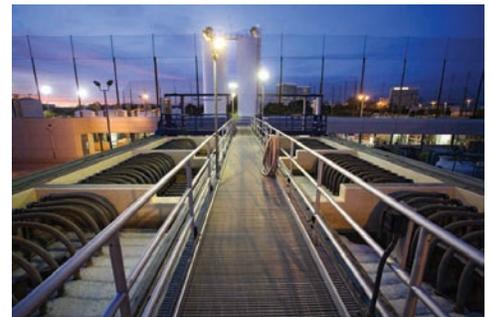
Project Description

The Edward C. Little Water Recycling Facility was built in 1992 and is one of only six national centers recognized by the National Water Research Institute for Water Treatment Technologies. This facility is now the largest water recycling facility of its kind in the U.S.

HDR partnered through a joint-venture to meet the owner’s design and construction needs. Utilizing the design-build alternative method of delivery, the West Basin Water Recycling Facility Phase IV Expansion received multiple awards for its technical accomplishments and construction approach, which consisted of expanding two treatment systems: the Barrier Water system and the Title 22 system. The upgrades to the Barrier Water Treatment included cartridge filters, chemical addition, microfiltration, reverse osmosis, decarbonation, ultraviolet (UV) irradiation, product water pump station, and conversion of the water chlorine contact tank to a product water pump station. The Barrier Water produced from the system is distributed and injected into a potable water aquifer. The capacity of the associated Title 22 water system was increased from 30 mgd to 40 mgd. This expansion included conversion of an existing clarifier, recarbonation basin, and existing filters, an addition of a 5 mg product water storage tank and backwash water pump station, and modifications to the existing disinfection system.

This complex facility was been constructed in phases on a small parcel of land. With space at a premium, our design and construction team addressed the need to install a new product water pump station by converting an existing chlorine contact basin that was no longer needed. This approach not only succeeded in meeting the space limitations of the site but satisfied Owner goals to complete the expansion as sustainably as possible.

During the design phase of the project the Owner concluded that additional treatment was needed to address the highly variably secondary effluent quality entering the facility for treatment. The HDR design team evaluated all alternatives and the limitations space limitations of the site and designed a 20 mgd high-rate clarifier to stabilize incoming water quality. The clarifier was integrated into the original design-build scope with minimal interruption to the overall project.



HDR served also as the Owner’s Representative for the Phase V project, which will expand the tertiary system from 40- to 50 mgd and expand the barrier from 12.5- to 17.5 mgd.

- Microfiltration system – 12 mgd expandable to 18 mgd
- Reverse osmosis system – 3.5 mgd
- Ultraviolet (UV) disinfection/NDMA reduction – 12.5 mgd
- Pretreatment system for Title 22 system – 22 mgd
- New solids handling thickeners – 8 mgd total hydraulic capacity
- Partially buried Clearwell – 5 Mgal
- Filter conversion/addition – 10 mgd
- Solids dewatering expansion – 27,000 lb/day solids dewatering capacity

AWARDS

- DBIA 2007, Western Pacific Region Award of Excellence
- Best in '07 Award by California Construction
- 2005 Water Reuse Association Project of the Year

Project Coordination. As the water treatment plant operated 24 hours a day, 7 days a week, there were many challenges for the HDR team to resolve with the operations staff during construction of this project. The facilitated collaboration between the project team and operations staff resulted in successfully coordinated teams overcoming each of the hurdles. HDR prepared a CPM Schedule to address scheduling challenges, including the need for detailed sequencing and pre-planning of startup phase activities. HDR's project schedule and start-up work plan included testing of each individual component, which required weekly planning and coordination meetings with the operations staff, the design-build team, and applicable vendors to ensure there were no interruptions to the plant. The HDR team was able to manage challenges with subcontractors and vendors resulting in timely completion and smooth start up of the expanded treatment facilities.

Separate tie-ins for hydraulic flows and process treatment systems were of concern because of the treatment plant's limited space and the need for continuous operation. Well-planned meetings with the plant operations staff countered these challenges by creating hour-by-hour schedules (marching charts) showing the sequence and designating responsibilities for different tasks, thereby eliminating any confusion during the tie-ins. There were more than fifty various tie-ins to process water and chemical systems. The mutual project goals included "no impact" to the delivery capabilities of the plant and combining as many tie-ins at one time to minimize overall disruptions. With the collaborative processes implemented between HDR's team and operations staff, these challenges had no effect on the project's schedule or plant operations.

Title 22 Treatment System improvements included demolishing the existing (currently mothballed) flocculation basins, constructing one 20 mgd high rate clarifier to expand pretreatment capacity to 46 mgd (average) and 52 mgd (peak), extending the Title 22 treatment train No. 1 conventional gravity filter gallery by four conventional gravity filters to provide an additional 10 mgd of filter capacity to provide a total of 50 mgd filter capacity, providing an additional 10 mgd of disinfection capacity by adding two chlorine contact basins to provide a total of 50 mgd disinfection capacity, and adding two medium voltage variable frequency drives on the Title 22 product water pumps.

Solids Handling System improvements included adding two mechanical thickening units operated 24 hours per day; constructing a building to house the mechanical thickeners, adding two new 24,000 gallon conditioning tanks, providing a dewatered solids conveyance system/a hopper storage system/odor control system, relocating the dewatering holding equalization basin backwash waste pumps, and installing wall-mounted submersible mixers in each of the equalization basins to better manage, continuously mix, and to mitigate solids accumulation in the equalization basins.

Reverse osmosis treatment process improvements included installation of two new reverse osmosis trains, each producing 2.5 mgd reverse osmosis permeate for the barrier (5 mgd total), as well as enhancing the existing reverse osmosis trains 4 and 5 to produce an additional 0.47 mgd of reverse osmosis permeate for NRG Power.

UV disinfection improvements included adding one UV train to provide 17.5 mgd of disinfection and advanced oxidation process treatment capacity for the barrier feed water.

Site Upgrades And Modification included modifying the reverse osmosis clean-in-place equipment, installing a sump for the reverse osmosis system, installing a reverse osmosis waste stream metering vault, enhancing and relocating the sulfuric acid distribution system, providing a building for equipment storage, providing bulk caustic storage, modifying the Saturator blowdown sump, and including provisions for on-site chemical spill containment, including two detention tanks and localized spill containment, including burms and a detention tank for the solids handling process.

Permitting was overseen by HDR. Key to HDR's approach was a company-wide regulatory and permitting action plan used in hundreds of HDR offices across the country and customized for each local area. The plan identified the agencies, their requirements, and a permitting schedule for each phase of the project. It became a living document to spark key tasks including: preparing applications and obtaining and maintaining necessary documentation, approvals, certifications, and permits. Finally, our permitting process was subject to HDR's QA/QC review, providing West Basin with another layer of accountability and assurance.

Funding - HDR assisted West Basin in securing funding for their recycled water programs by developing a master database of potential funding sources and providing technical assistance in the preparation of compelling grant application packages with value-added elements.

Blue Plains Advanced WWTP Main Process Train Improvements Washington, DC

<u>Project Owner</u> DC Water	<u>Size of Facility</u> 370 mgd	<u>Technical Elements/Relevance</u> <ul style="list-style-type: none"> • Integrated design-build project delivery • New technology implemented in an existing plant • Intense startup, commissioning and training plans
<u>HNP Firm Member(s) Involved</u> <ul style="list-style-type: none"> • PC (construction) 	<u>Total Project Value</u> \$210.3 million	
	<u>Completion Date</u> January 2015 (estimated)	

Project Description

Located at the world’s largest advanced wastewater treatment plant (370 mgd), this project is part of the facility’s biosolids management plan to incorporate Cambi’s Thermal Hydrolysis Process (THP) into the operating facility. This design-build joint venture project includes:

- Four Cambi Thermal Hydrolysis process trains, expandable to six process trains
- Four, four-million-gallon anaerobic digesters, solids screening, centrifuges, solids handling and pumping facilities
- Improvements that will reduce solids from 1,270 wet tons per day of Class B sludge to 450 dry tons of Class A biosolids
- Self-consolidating concrete in conjunction with post tensioned cable walls
- On-site fabrication and installation of four fixed steel digester covers which were then floated to the top of the digesters and secured in place
- 70 percent of contract value self-performed by PC Construction workforce, including concrete placement, mechanical process equipment and site work
- Design began June 2011 with construction beginning January 2012
- Mechanical completion scheduled for August 2014 with final completion by March 2015

At the completion of this project, the Blue Plains Advanced Wastewater Treatment Plant will be the largest thermal hydrolysis process plant in the world.



DC Water’s Main Process Train Improvements under construction

Yellow River Water Reclamation Facility Improvements

Lilburn, GA

Project Owner Gwinnett County Department of Public Utilities	Size of Facility 22 mgd	Technical Elements/Relevance <ul style="list-style-type: none"> • New treatment technology integrated into existing plant • Extensive plant shutdowns, bypasses and tie-in's
HNP Firm Member(s) Involved <ul style="list-style-type: none"> • PC (construction) 	Total Project Value \$238.3 million	
	Completion Date 2012	

Project Description

This five-year expansion of the existing 12.5 mgd facility to 22 mgd included:

- Complete replacement of the wastewater treatment process while the existing plant remained operational
- Dramatic improvements to effluent quality
- Phased decommissioning followed by new construction
- Multiple construction phase packages
- New preliminary treatment/primary clarifier structure, two, 20 million gallon storage/equalization tanks, fine screen/lime facility, biological reactor basins, UV disinfection facility and post aeration facility
- Influent pump station
- GE Zenon membrane filtration facility
- LEED Gold operations center
- Self-performance of 70 percent of the contract value by PC Construction's workforce

Awards

- 2012 Best Project Award, Best Civil Works/Infrastructure, ENR Southeast Region
- 2012 Project Achievement Award, Construction Management Association of America
- 2012 Best of the Best Civil Works/Infrastructure, ENR National Award
- 2011 Top Water and Wastewater Project, Water and Wastes Digest
- 2011 Georgia Outstanding Civil Engineering Achievement Award, American Society of Civil Engineers



Yellow River Water Reclamation Facility

Airport Parkway Wastewater Treatment Facility Upgrade South Burlington, VT

<u>Project Owner</u>	<u>Size of Facility</u>	<u>Technical Elements/Relevance</u>
City of South Burlington	Upgrade and expansion from 2.3 mgd facility to 3.3 mgd	<ul style="list-style-type: none"> • Upgrade to existing treatment plant • Added new treatment processes to an existing plant • Stringent MOPO requirements
<u>HNP Firm Member(s) Involved</u>	<u>Total Project Value</u>	
<ul style="list-style-type: none"> • PC (construction) 	\$22.5 million	
	<u>Completion Date</u>	
	2011	

Project Description

The Airport Parkway Wastewater Treatment Facility Upgrade included an upgrade and expansion of an existing facility from 2.3 to 3.3 mgd, including:

- Headworks, primary and secondary clarifiers, aeration tanks, digester complex, secondary treatment complex, administration building and maintenance garage
- Solids handling facility producing Class A sludge
- Filtration and UV building to replace the existing chlorine disinfection system
- Expansion of the lab building to accommodate future needs
- Improvements allow for the utilization of biogas from the digestion process to fuel a cogeneration system for the plant's boiler and a micro-turbine generator



Airport Parkway Wastewater Treatment Facility

H.L. Mooney Water Reclamation Facility Expansion and Upgrade

Woodbridge, VA

Project Owner Prince William County Service Authority	Size of Facility 24 mgd	Technical Elements/Relevance <ul style="list-style-type: none"> • Integrated design-build project delivery • Nutrient removal upgrade of a large plant • Extensive MOPO requirements and full plant bypasses requirements
HNP Firm Member(s) Involved <ul style="list-style-type: none"> • PC (construction) 	Total Project Value \$118.8 million	
	Completion Date 2011	

Project Description

This design-build expansion and upgrade touched every aspect of the existing, fully-operational facility. The entire process flow from the primary clarifier effluent to the UV facility influent was intercepted and routed incrementally with no permit violations and zero impact to the discharge effluent quality. The expansion included:

- Increased plant capacity from 18 mgd to 24 mgd
- New screening and grit facilities, primary clarifier, aeration basin and secondary clarifiers
- Reconfiguration of existing aeration basins and installation of new aeration basins
- A new RAS pump station (influent and RAS), thickener sludge pump station, denitrification facilities, gravity thickeners, centrifuge dewatering system including sludge feed pump and cake pump
- Modification and/or construction of a new six-chemical feed system
- A new plant-wide SCADA system

Awards

- 2011 Design-Build Institute of America (DBIA) National Design-Build Excellence Award



H.L. Mooney Water Reclamation Facility

1c. Prior Projects & References

For each private entity or major subcontractor (\$1 million or more) that will be utilized in the project, provide a statement listing all of the private entity's prior projects and clients for the past five years and contact information for same (names/ addresses/telephone numbers). If a private entity has worked on more than ten (10) projects during this period, it may limit its prior project list to ten (10), but shall first include all projects similar in scope and size to the proposed project and, second, it shall include as many of its most recent projects as possible. Each private entity or major subcontractor shall be required to submit all performance evaluation reports or other documents which are in its possession evaluating the private entity's performance during the preceding three years in terms of cost, quality, schedule maintenance, safety and other matters relevant to the successful project development, operation, and completion.

HDR References

HRWTF Alt. 4A-1 Light Phase 1, Contract No. 1, 2, and 3	
Client	City of Hopewell
Address	PO Box 969, Hopewell, VA 23860
Name & Phone	Mark Haley, 804-541-2210
Dates	2008-2012
Capacity	50 mgd
Wastewater (WW) Type:	Predominately Industrial
Project Cost	\$19,000,000

1

HRSD Virginia Initiative Plant Nutrient Removal Improvements	
Client	HRSD
Address	1434 Air Rail Ave., Virginia Beach, VA 23455
Name & Phone	Bruce Husselbee, 757- 460-7012
Dates	2011-Est. 2017
Capacity	40 mgd
WW Type:	Predominately Municipal
Project Cost	\$120,000,000

4

HRSD ATP Expansion I, Contract C	
Client	Hampton Roads Sanitation District (HRSD)
Address	1434 Air Rail Ave., Virginia Beach, VA 23455
Name & Phone	Bruce Husselbee, 757- 460-7012
Dates	2004-2013
Capacity	54 mgd
WW Type:	Predominately Municipal
Project Cost	\$164,000,000

2

Fort Meade Water and Wastewater Improvements	
Client	American Water (Design-Build Project Delivery, HDR as a subconsultant to the Contractor – Bowen Engineering Corporation)
Address	3210 Laurel Ft. Meade Road Route 198, Laurel, MD 20724
Name & Phone	Jameson Pearson, 410-294-4756
Dates	2010-Est. 2014
Capacity	12.3 mgd (WWTP) and 3.3 mgd (WTP)
WW Type:	Predominately Municipal
Project Cost	\$57,900,000

5

HRSD Army Base Treatment Plant Improvements Phase III	
Client	HRSD
Address	1434 Air Rail Ave., Virginia Beach, VA 23455
Name & Phone	Bruce Husselbee, 757- 460-7012
Dates	2006-Est. 2014
Capacity	18 mgd
WW Type:	Predominately Municipal
Project Cost	\$106,000,000

3

McAlpine WWTF Effluent Filter Upgrades	
Client	Charlotte-Mecklenburg Utilities (Design-Build Project Delivery, HDR as a subconsultant to Contractor – Crowder Construction Co.
Address	15100 Brookshire Blvd., Charlotte, NC 28216
Name & Phone	Kit Eller, 704-391-4708
Dates	2012 – Est. 2014
Capacity	64 mgd
WW Type:	Predominately Municipal
Project Cost	\$25,000,000 6

Sanitary Effluent Reclamation Facility (SERF) Expansion	
Client	U.S. Dept. of Energy, Los Alamos National Laboratory (LANL) & Los Alamos National Security (LANS)
Address	Bikini Atoll Rd., SM 30, Los Alamos, NM 87545
Name & Phone	Chris Quartieri, 550-665-6074
Dates	2011-2012
Capacity	0.4 mgd
WW Type:	Predominately Municipal
Project Cost	\$11,413,000 9

Advanced Wastewater Treatment Program Management	
Client	Sacramento Regional County Sanitation District
Address	8521 Laguna Station Road Elk Grove, CA 95758
Name & Phone	Vick Kyotani, 916-875-9001
Dates	2012 - 2021
Capacity	150 mgd (average)
WW Type:	Predominately Municipal
Project Cost	\$2,100,000, 000 7

Shale Gas Water and Wastewater System	
Client	Heckmann Water Resources Corp. (currently Nuverra Environmental Solutions)
Address	300 Cherrington Parkway, Suite 200 Coraopolis, PA 15108
Name & Phone	John Lucey, 412-329-7275 x118
Dates	2012
Capacity	12.6 mgd
WW Type:	Predominately Industrial
Project Cost	\$30,000,000 10

South County Wastewater Treatment Plant Expansion	
Client	Hillsborough County Public Utilities Department
Address	925 E. Twiggs Street Tampa, FL 33602
Name & Phone	Lisa Murrin, 813-272-5977 ext. 43303
Dates	2008 - Est. 2014
Capacity	10 mgd
WW Type:	Predominately Municipal
Project Cost	\$79,000,000 8

PC References

Blue Plains Advanced WWTP Main Process Train Improvements	
Client	DC Water
Address	5000 Overlook Ave. SW, Washington, DC 20032
Name & Phone	Gus Bass, 202-787-2355
Dates	2012 – present
Capacity	370 mgd
WW Type:	Municipal
Project Cost	\$210,300,000

1

H.L. Mooney Water Reclamation Facility Expansion and Upgrade	
Client	Prince William County Service Authority
Address	4 County Complex Court, Woodbridge, VA 22192
Name & Phone	Steve Bennett, 703-393-2062
Dates	2008 – 2012
Capacity	24 mgd
WW Type:	Municipal
Project Cost	\$118,800,000

4

Yellow River Water Reclamation Facility Improvements	
Client	Gwinnett County Department of Water Resources
Address	684 Winder Hwy., Lawrenceville, GA 30045
Name & Phone	Richard Schoeck, 678-376-6953
Dates	2007 – 2012
Capacity	23 mgd
WW Type:	Municipal
Project Cost	\$238,300,000

2

HRSD ATP Expansion Phase I	
Client	HRSD
Address	1434 Air Rail Ave., Virginia Beach, VA 23455
Name & Phone	Bruce Husselbee, 757- 460-7012
Dates	2007 – 2010
Capacity	54 mgd
WW Type:	Predominately Municipal
Project Cost	\$164,000,000

5

Airport Parkway Wastewater Treatment Facility Upgrade	
Client	South Burlington Department of Public Works
Address	104 Landfill Road, S. Burlington, VT 05403
Name & Phone	Justin Ravidoux, 802-658-7961
Dates	2010 – 2012
Capacity	3.3 mgd
WW Type:	Municipal
Project Cost	\$23,500,000

3

Tupelo Bayou Wastewater Treatment Plant Improvements	
Client	Conway Corporation
Address	800 South Harkrider, P.O. Box 99, Conway, AR 72033
Name & Phone	David Bradley, 501-548-3026
Dates	2012 – present
Capacity	16 mgd; expandable to 32 mgd
WW Type:	Municipal
Project Cost	\$66,300,000

6

Percy D. Miller Water Treatment Plant Upgrade	
Client	City of Winchester
Address	165 North Cameron Street Rouse City Hall, Winchester, VA 22601
Name & Phone	Steven Corbit, 540-667-1815
Dates	2010-2012
Capacity	10 mgd
WW Type:	Municipal
Project Cost	\$20,700,000

9

Basham Simms Wastewater Facility Expansion	
Client	Town of Purcellville
Address	130 E. Main St., Purcellville, VA 20132
Name & Phone	Samer Beidas, 703-335-7929 (currently with Prince William County)
Dates	2008 – 2010
Capacity	1.5 mgd
WW Type:	Municipal
Project Cost	\$23,600,000

7

Durbin Creek Wastewater Treatment Plant	
Client	Renewable Water Resources (ReWa)
Address	561 Mauldin Rd., Greenville, SC 29607
Name & Phone	Charles Vaskula, 864-299-4000
Dates	2006-2009
Capacity	5.2 mgd
WW Type:	Municipal
Project Cost	\$39,200,000

10

Broad Run Water Reclamation Facility, Contracts 2 and 3	
Client	Loudoun Water
Address	44865 Loudoun Water Way, Ashburn, VA 20146
Name & Phone	Tom Broderick, 571-291-7825
Dates	2006 – 2008
Capacity	10 mgd
WW Type:	Municipal
Project Cost	\$75,700,000

8

Technology Provider Prior Experience

World Water Works, Inc.

WWW, incorporated in 1998, is a U.S. employee-owned manufacturer of specialized advanced wastewater treatment solutions with design focus on performance, flexibility and longevity yielding the best water quality at the lowest life cycle costs.



York River Treatment Plant

WWW is a global leader in MBBR and DAF technology. WWW recently delivered the largest municipal complete treatment MBBR. WWW has assembled a team of diverse technical experts including engineers, scientists, operators, mechanics, and electricians. WWW uniquely combines a strong research and development program with in-house manufacturing. WWW technologies have won numerous awards for delivering the highest water quality and maximum resource recovery. One recent award was the American Academy of Environmental Engineers and Scientists (AAEES) Sustainability Award for an HRSD York River Treatment Plant DEMON® project. The projects below demonstrate WWW proven track record.

Midwest City WWTP: Complete Treatment MBBR, Midwest City, OK

Completion Date: Ongoing
Size of Facility: 10.3 mgd
Equipment Value: \$4.4 M

Technical Elements/Relevance

- MBBR for BOD, Ammonia and nitrate removal
- New construction with specific design features required for the MBBR due to approach velocity
- Municipal Facility upgrading from RBC's to meet new effluent permit limit for BOD and Total Nitrogen

Mountaire Farms: MBBR + DAF, Selbyville, DE

Completion Date: 2011
Size of Facility: 1.3 mgd
Equipment Value: \$1.4 M

Technical Elements/Relevance

- Industrial Facility – Fluctuating Loads
- MBBR for BOD & Ammonia Removal
- DAF for Final Clarification of Biological Solids

Moark, LLC: Complete Treatment DAF + MBBR + DAF, Bozrah, CT

Completion Date: 2010
Size of Facility: 0.02 mgd
Equipment Value: \$1.4 M

Technical Elements/Relevance

- Industrial Facility – Direct Discharge Permit
- MBBR for BOD & Total Nitrogen Removal
- DAF for Final Clarification of Biological Solids

DC Water: DEMON®, Washington, DC

Completion Date: Ongoing
Size of Facility: 352 mgd;
 2.7 mgd (filtrate system)
Equipment Value: \$6.3 M

Technical Elements/Relevance

- New construction/specific design features required.
- Filtrate from system exhibited toxicity to the AOB. Pilot testing allowed for better knowledge of wastewater to show treatability and a full scale design.
- Close collaboration between vendor, engineer and municipal client for a more cost-effective system.

Hillshire Farms (formerly Sara Lee): DAF + MBBR + DAF, Storm Lake, IA

Completion Date: 2012
Size of Facility: 1.2 mgd;
 4,507 lb/day BOD;
 1,000 lb/day TSS;
 1,102 lb/day TKN to MBBR
 treatment system
Equipment Value: \$4 M

Technical Elements/Relevance

- DAF – MBBR – DAF configuration for treatment of wastewater prior to discharge to local WWTP
- Single stage MBBR provides BOD removal as partial nitrification to reduce loading on city WWTP
- Variable / seasonable loading to DAF + MBBR + DAF system

Heyward, Inc.

Heyward has provided service and equipment to HRWTF for many years, and is very knowledgeable about the plant operations and installed process equipment, and the new matching equipment that is proposed as part of the Phase 2 Improvements project. Heyward also has direct experience with MBBR and fixed film process technologies that are relevant to the City of Hopewell’s project as evidenced by the following project experience.



MBBR Pilot Plant at Hopewell

Noman Cole WWTP: MBBR, Lorton, VA

Technical Elements/Relevance

- Furnished MBBR Process Equipment for treated effluent polishing to remove Nitrates
- New construction with specific design features required to meet effluent TN=2 mg/l
- Municipal Facility upgrading to meet new effluent permit limit for BOD, Total Nitrogen and Total Phosphorous

Completion Date: 2013

Size of Facility: 67 mgd

Equipment Value: \$10 M

HRSD James River WWTP: IFAS, Newport News, VA

Technical Elements/Relevance

- Furnished IFAS Process Equipment for BOD, Nitrogen and Phosphorous Removal
- Modification of the existing biological reactors to an MLE configuration with integrated fixed film activated sludge (IFAS) in the aerobic sections
- Municipal Facility upgrading to meet new effluent permit limit for BOD, Total Nitrogen and Total Phosphorous

Completion Date: 2013

Size of Facility: 20 mgd

Equipment Value: \$8 M

Hopewell Regional WTF: Alt. 4A-1 Phase 1, Contract 1

Technical Elements/Relevance

- Furnished Process Equipment for New Headworks Facility and Primary Clarifier Modifications
- New Domestic Influent Fine Screens and Screenings Washer/Compactors with Controls
- Retrofit/Modification of Primary Clarifiers Nos 1-3, Chain & Flight Sludge Collectors
- Large-Bubble Mixing System for Chlorine Contact Tanks
- Sodium Hypochlorite Chemical Feed Systems and Controls

Completion Date: 2012

Size of Facility: 50 mgd

Equipment Value: \$2 M

Hopewell Regional WTF: Post Aeration Facility, Design-Build Project

Technical Elements/Relevance

- Furnished Process Equipment for New Post Aeration Facility
- Teamed with Local Contractor and Engineer to provide turn-key solution
- Furnished Facility Design and Oxycharger Static Aerator Equipment

Completion Date: 2001

Size of Facility: 50 mgd

Equipment Value: \$1.8 M

Hopewell Regional WTF: Centrifuge Solids Dewatering Facility

Technical Elements/Relevance

- Furnished Process Equipment for Centrifuge Solids Dewatering Facility
- New Horizontal Decanter High-Solids Centrifuges with Controls
- New Foreign Sludge Hopper, Incinerator Feed Pumps, and Sludge Transport System with Controls

Completion Date: 1998

Size of Facility: 50 mgd

Equipment Value: \$3 M

Performance Evaluation Reports

Most client performance evaluation reports are of a confidential nature and as such cannot be included with this submission. However in the interest of transparency, reviewers are encouraged to contact any or all references provided on pages 59-62. These clients can attest to our qualifications and commitment to safety, schedule, cost and quality. Additionally, the table below lists example projects where our team met schedule and cost goals.

Demonstrated Ability to Meet Schedule

Project	Milestone	Scheduled	Actual
HDR: HRSD Atlantic Treatment Plant Expansion Phase I	Issue Final PER	2/28/05	2/25/05
	Initiate Final Design	2/1/05	1/7/05
	Advertisement - Contract C	12/1/06	11/12/06
	Bid Opening – Contract C	2/28/07	2/15/07
	Construction NTP – Contract C	5/29/07	5/1/07
	Substantial Completion – Contract C	5/28/10	4/12/10
HDR: HRSD York River Treatment Plant Expansion Phase I Contract B	Notice to Proceed	11/1/10	11/1/10
	30% Design	2/1/10	2/1/10
	60% Design (95% Site & Foundations)	6/28/11	6/10/11
	Submit Guaranteed Maximum Price	6/29/11	6/29/11
HDR: HRWTF Alt. 4A-1 Light Phase 1, Contract No. 1, 2, and 3	Contract 1: Advertise	2/3/10	2/3/10
	Contract 1: Notice to Proceed	8/2/10	8/2/10
	Contract 1: Substantial Completion	4/23/12	4/18/12
	Contract 2: Advertise	8/9/10	8/9/10
	Contract 2: Notice to Proceed	1/10/11	1/10/11
	Contract 2: Substantial Completion	1/15/12	3/3/12
	Contract 3: Advertise	9/14/10	9/14/10
	Contract 3: Notice to Proceed	2/14/11	2/14/11
	Contract 3: Substantial Completion	9/11/11	10/26/12
PC: Percy Miller WTP Upgrade	Notice to Proceed	1/04/10	1/04/10
	Substantial Completion	5/13/12	3/21/12
	Final Completion	8/11/12	4/30/12
PC: Basham Simms Wastewater Facility Expansion	Notice to Proceed	3/24/08	3/24/08
	Contract 1, Milestone 1	6/22/08	3/31/08
	Contract 1, Milestone 2	7/21/09	7/17/09
	Contract 1, Milestone 3	10/19/09	8/07/09
	Contract 1, Milestone 4	4/11/10	6/08/10
	Contract 1, Milestone 5	6/10/10	4/21/10
	Contract 1, Milestone 6	8/9/10	8/2/10
	Contract 2, Milestone 1	2/17/09	2/12/09
	Contract 2, Milestone 2	4/18/09	4/07/09
PC: H.L. Mooney WRF Expansion and Upgrade Stage 2, Phase 1	Notice to proceed	10/04/07	10/04/07
	Substantial Completion	9/30/10	9/30/10
	Final Completion	5/30/11	4/30/11

Demonstrated Ability to Stay Within Budget

Project	Milestone	Estimated/Actual
HDR: HRSD Atlantic Treatment Plant Expansion Phase I	PER Estimate	\$100,000,000
	Engineer's Estimate at Bid	\$149,139,000
	Accepted Bid Price	\$148,506,000
	Change Orders – Owner-Generated	\$12,292,433 (8.3%)
	Change Orders – Transfer Work Between Contracts	\$1,080,743 (0.7%)
	Change Orders – Other	\$2,706,991 (1.8%)
	Final Contract Price	\$164,586,167
HDR: HRSD York River Treatment Plant Expansion Phase I Contract B	Initial Proposal	\$49,883,000
	Contract Cost Limit	\$41,992,000
	Guaranteed Maximum Price Proposal	\$40,323,000
	Guaranteed Maximum Price Accepted	\$40,550,000
HDR: HRWTF Alt. 4A-1 Light Phase 1, Contract No. 1, 2, and 3	Contract 1 Change Orders	\$302,340
	Contract 2 Change Orders	\$47,690
	Contract 3 Change Orders	(\$1,158)
	Total Change Orders	\$348,872
	PER Estimate	\$29,920,000
	Engineer's Estimate at Bid	\$20,410,000
	Accepted Bid Price	\$16,086,000
PC: HRWTF Alt. 4A-1 Light Phase 1, Contract No. 1 (Competitive Bid)	Bid price	\$8,700,000
	Change Orders	\$302,340
	Final cost	\$9,002,340
PC: H.L. Mooney WRF Expansion and Upgrade Stage 2 Phase 1 (Design-Build)	Bid price (GMP)	\$108,750,000
	Change Orders (owner initiated)	\$10,050,000
	Final Contract Price	\$118,800,000
PC: Yellow River Advanced Water Reclamation Facility (CM-at-Risk)	GMP price	\$250,000,000
	Change Orders (Value Engineering savings)	(\$11,700,000)
	Final Contract Price	\$238,300,000

1d. Team Contact Information

Provide the names, addresses, and telephone numbers of persons within the private entity who may be contacted for further information.

HNP Main Point of Contact for City of Hopewell

Bob Huie, Design-Build Project Manager
Hopewell Nutrient Partners, A Joint Venture
802-922-6535
RHuie@pcconstruction.com
5700 Lake Wright Drive, Suite #300
Norfolk, VA 23503

Other Points of Contact

Bill M'Coy, Design Manager
HDR Engineering, Inc.
757-222-1517

William.Mcoy@hdrinc.com

5700 Lake Wright Drive, Suite #300
Norfolk, VA 23503

Tony Snead, Vice President
HDR Constructors, Inc.
602-723-8296

Tony.Snead@hdrinc.com

3200 East Camelback Rd., Suite 350
Phoenix, AZ 85018

Jeff Garner, Senior Vice President
PC Construction Company
802-598-6818

JGarner@pcconstruction.com

193 Tilley Drive
South Burlington, VT 05403

1e. Audited Financial Statements

Provide a current or most recently audited financial statement of the private entity and each partner with an equity interest of ten percent or greater.

Due to the confidential nature of our audited financial statements, please refer to Volume II, Section 1e.

1f. Disqualifications

Identify any persons known to the proposer who would be obligated to disqualify themselves from participation in any transaction arising from or in connection to the project pursuant to the Virginia State and Local Government Conflict of Interests Act, Chapter 31 (§ 2.2-3100 et seq.) of Title 2.2.

Statement

The Hopewell Nutrient Partners, A Joint Venture, its component partners, nor its major team member firms have anyone on staff who would be disqualified from participating in any transaction arising from or in connection to this proposed PPEA project pursuant to the Virginia State and Local Government Conflict of Interest Act. Additionally, HNP knows of no one affiliated with this project that would have a conflict of interest.

1g. Proposed Plan for Obtaining Sufficient Number of Qualified Workers

Identify the proposed plan for obtaining sufficient numbers of qualified workers in all trades or crafts required for the project.

Regional Resources

HNP’s two component partners (HDR and PC) have constructed projects in 32 states over the past 55 years and have a labor force of nearly 9,500 professionals and craft workers. PC has more than a dozen projects with an aggregate value of nearly \$450 million within a two-and-a-half hour drive of the HRWTF. PC has the ability to draw experienced craft workers and construction equipment resources, as-needed, to most efficiently construct the Phase 2 Improvements project. These projects have been ongoing and have a large pool of experienced professionals. In addition, HDR has a staff of 300 engineering and construction professionals who live and work in Virginia.

Over the last few decades of performing work in the region, HNP’s component partners have established excellent relationships with local and regional key subcontractors and vendors. The subcontractors and vendors appreciate the orderly, well-planned manner in which our projects are constructed, getting paid on time and our commitment to the safety of all workers on the site.

Benefits to the City of Hopewell

- Prequalification and careful structuring of work packages lead to competitive pricing, maximization of the resources of the subcontractor community, and delivery of the level of quality expected by HRWTF

Self-Perform Work

HNP anticipates self-performing approximately 70 percent of the direct craft labor on the Phase 2 Improvements project including:

- Yard Piping
- Structural Excavation
- Structural Concrete
- Process Piping
- Process Equipment
- HVAC Equipment and piping
- Plumbing

The City of Hopewell benefits from this approach because:

- HNP directly controls all construction work on the critical path except electrical, instrumentation, and controls. This allows HNP to shift resources as needed to execute the critical path schedule.
- HNP carefully coordinates all mechanical and structural tie-ins allowing us to plan for and swiftly respond to any changes due to plant operations needs or unexpected conditions. This is particularly important on this project as construction operations and plant operations will be interactive.
- This approach in many instances minimizes double markups for overhead and profit, which lowers overall project cost.

The anticipated self-performed labor by HNP represents approximately 10 percent of the total direct cost of the work. The remainder of the work and all materials and equipment installed with HNP labor will be competitively selected.

1h. Legal Information

For each private entity or major subcontractor that will perform construction or design activities, provide the following information:

(1) A sworn certification by an authorized representative of the private entity attesting to the fact that the private entity is not currently debarred or suspended by any federal, state or local government entity.

(2) A completed qualification statement that reviews all relevant information regarding technical qualifications and capabilities, private entity resources and business integrity of the private entity, including but not limited to, bonding capacities, insurance coverage and private entity equipment. This statement shall also include a mandatory disclosure by the private entity for the past five years any of the following conduct:

- | | |
|--|--|
| (A) bankruptcy filings | (H) denials of prequalification, findings of non-responsibility |
| (B) liquidated damages | (I) safety past performance data, including fatality incidents, "Experience Modification Rating," "Total Recordable Injury Rate" and "Total Lost Workday Incidence Rate" |
| (C) fines, assessments or penalties | (J) violations of any federal, state or local criminal or civil law |
| (D) judgments or awards in contract disputes | (K) criminal indictments or investigations |
| (E) contract defaults, contract terminations | (L) claims filed by or against the firm |
| (F) license revocations, suspensions, other disciplinary actions | |
| (G) prior debarments or suspensions by a governmental entity | |

Sworn Certification Stating Private Entity Is Not Currently Debarred Or Suspended

Our team has provided sworn statements for the HNP component partners on the following pages.

HDR Financial and Legal Information

In Volume II, Section 1h, please find HDR's financial and legal information: Qualification Statement, Bonding, Insurance, Private Entity Equipment, and mandatory disclosure subsections A through L.

PC Financial and Legal Information

In Volume II, Section 1h, please find PC's financial and legal information: Qualification Statement, Bonding, Insurance, Private Entity Equipment, and mandatory disclosure subsections A through L.

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AFFIDAVIT OF NO DEBARMENT OR SUSPENSION

The undersigned hereby certifies it is not currently debarred or suspended by any federal, state or local government entity.

Date: 8/30/13

By: [Signature]
(Signature of Respondent's Authorized Representative)

By: Douglas E. Lisak
(Printed Name of Respondent's Authorized Representative)

Title: President
(Title of Respondent's Authorized Representative)

For: HDR Constructors, Inc.
(Title of Respondent's Authorized Representative)

Shawn P. Murphy
(Notary Public)

State of: Missouri

County of: Jackson

On this 30th day of August, 2013, before me appeared Douglas E. Lisak, personally known to me to be the person described in and who executed the document and acknowledged that (she/he) signed the same freely and voluntarily for the uses and purposes therein described.

In witness thereof, I have hereunto set my hand and affixed my official seal the day and year last written above.

Shawn P. Murphy
(Signature)

Notary Public in and for the state of: Missouri

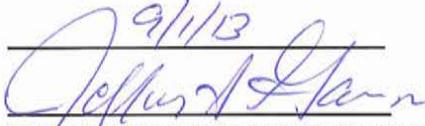
Shawn P. Murphy
(Printed Name)

SHAWN P. MURPHY
Notary Public-Notary Seal
STATE OF MISSOURI
Jackson County
My Commission Expires June 27, 2015
ID # 11206722

AFFIDAVIT OF NO DEBARMENT OR SUSPENSION

The undersigned hereby certifies it is not currently debarred or suspended by any federal, state or local government entity.

Date: 9/11/13

By: 
(Signature of Respondent's Authorized Representative)

By: Jeffrey A. Garner
(Printed Name of Respondent's Authorized Representative)

Title: Senior Vice President
(Title of Respondent's Authorized Representative)

For: PC Construction, Inc.
(Title of Respondent's Authorized Representative)

(Notary Public)

State of: Vermont

County of: Chittenden

On this 1st day of September, 2013, before me appeared Jeffrey A. Garner, personally known to me to be the person described in and who executed the document and acknowledged that (she/he) signed the same freely and voluntarily for the uses and purposes therein described.

In witness thereof, I have hereunto set my hand and affixed my official seal the day and year last written above.


(Signature)

Notary Public in and for the state of: Vermont 2/10/2015

Kathryn Kantorski
(Printed Name)

1i. Worker Safety Programs

Describe worker safety training programs, job-site safety programs, accident prevention programs, written safety and health plans, including incident investigation and reporting procedures.

HNP Worker Safety Program

Safe construction begins with proper planning and a positive attitude towards achieving a stated goal, and continues with the execution of a written plan. HNP has adopted PC's Safety Program for the HRWTF Phase 2 Improvements project. HDR's Safety Program is designed to ensure individual and project safety as well as protect and preserve the health of everyone who enters our project sites. Our primary goal is for all employees to return home in the same healthy condition in which they arrived. To that end, we require all HNP, subcontractor, owner and vendor personnel to strictly adhere to HNP's Safety Program as well as other federal, state and owner safety regulations.

HNP's safety program is built upon the attitude that all incidents are preventable. We will employ a Zero Accidents – No Excuses philosophy for managing project safety. Our nationally-recognized safety program is based upon the fundamentals of prevention, awareness and personal accountability. HNP's proactive approach to safety includes:

- Pre-planning
- Education
- Prevention

HNP recognizes that our most critical safety device on any project is a safety-conscious employee. Our team understands that safety is more than a priority; it is a condition of employment. We are proud of our dedication to safety and our team's resulting safety performance. HDR and PC both offer impressive safety records as demonstrated in our EMR rankings in Volume II, Section 1h. PC is nationally ranked in the top 2 percent of contractors for their safety record.



Project Specific

Overall responsibility for safety on this project will rest with the superintendents who will proactively manage the implementation of the site safety plan for HNP's team, subcontractors and suppliers working on the job site. Reporting to our construction manager will be our full-time safety engineer who is responsible for administering our site safety program.

The first step occurs before the project begins and focuses on a project-specific site safety plan. Working with the owner and regional safety engineer, the project team will develop the plan at the onset of the project. The plan will identify the risks or hazards associated with the work, employee safety training needs and owner safety requirements. The initial plan will be completed prior to the start of any major construction activities and will be updated throughout the course of the project.

Our safety engineer will monitor implementation of the plan which includes:

- Orchestrating pre-employment drug testing and training
- Integrating our plan with Hopewell's safety plan
- Pre-planning of all activities including any special requirements of the project

Every treatment plant is unique and has its own safety procedures and protocols. Our safety engineers will review your safety plan and incorporate any special requirements that may be different from our procedures.

For example, evacuation rally points, severe weather protocols and chemical handling requirements for your plant may require specialized procedures that may differ from our plan or our interpretation of your procedures.

Our safety engineers understand that communication is the key to implementation of our safety plan for adaptation of any special situations that may be unique to the Hopewell plant.

HNP’s safety pre-planning worksheet assists project teams with planning safety into activities involving potential high risks such as falls, excavation, confined space, and lock out/tag out as well as activities requiring logistics to complete such as scaffolding, lanyards or lifelines. Activities requiring more in-depth safety planning will be identified at the onset of the project in the site-specific safety plan and the actual plans develop throughout the course of the project.

Safety Audits

As part of HNP’s commitment to safety, regular safety audits are conducted using the Predictive Solutions safety technology. Predictive Solutions is a management tool that allows the designated site safety officer and project management team to log safe and unsafe observations relative to OSHA safety categories (i.e., personnel protective equipment, fall protection, scaffolding, etc.). As the site safety engineer or superintendent conducts the safety audit, the observations are logged into a hand-held device. At the end of the audit, the results are tabulated and any unsafe observations are reviewed with the project team. Corrective actions for unsafe observations are then noted in the database and tracked until the issue is resolved. Copies of the audit reports are then generated by the Predictive Solutions system and distributed to the project management team.

Over time, the project data stored in Predictive Solutions is tracked to review project safety performance and identify any potential trends for unsafe acts (i.e., scaffolding hazards). Once a potential trend is identified, the information can be used to proactively address potentially unsafe conditions, eliminating more serious safety issues that could develop in the future.

Safety Awards
Vermont Governor’s Award for Outstanding Workplace Safety – Finalist 2010
Best Craft Training Program Associated General Contractors of America (AGC) – Awarded to PC Construction 2009
Outstanding Safety Record Award AGC of Georgia – Honored for supervising over 50,000 hours of work in 2004 without a lost time or recordable injury
National Construction Safety Excellence Award AGC of America – Awarded to PC Construction in the Heavy Contractor Division 2000



SECTION 2 - PROJECT CHARACTERISTICS



SECTION 2 | PROJECT CHARACTERISTICS

2a. Proposed Project Description

Provide a description of the proposed project, including the conceptual design, in sufficient detail so that type and intent of the project, its location, and the communities that may be affected are clearly identified.

Background

The Hopewell Regional Wastewater Treatment Facility (HRWTF) is a 50 million gallon per day (mgd) secondary wastewater treatment plant that currently treats an annual average flow of approximately 27 mgd of combined wastewater from local industries and domestic sources. Industrial loading comprises approximately 85 percent of the total flow and 90 percent of the organic loading to the HRWTF and is generated primarily by five local industries: Honeywell, Hopewell, Virginia Plant (Honeywell), Ashland Aqualon (Ashland), Evonik Goldschmidt (Evonik), RockTenn, and the Virginia American Water Company (VAWCO). Other industrial sources include leachate haulers and Fort Lee.

The HRWTF discharges effluent into Gravelly Run, a tributary of the James River in the Chesapeake Bay Watershed. As a Significant Discharger to the Chesapeake Bay, the HRWTF's allowable nutrient discharge loading is capped by nutrient control regulations adopted by the Virginia Department of Environmental Quality on the Chesapeake Bay and its tributaries (Virginia's Water Quality Management Planning Regulation 9 VAC 25-720). The current waste load allocations established for HRWTF are 1.83 million lbs/year (Mlbs/year) of total nitrogen (TN) and 0.075 Mlbs/year of total phosphorus (TP). The HRWTF is currently below its phosphorus waste load allocation, but exceeded its TN waste load allocation in 2009 and 2010. HRWTF purchases nitrogen credits under the Chesapeake Bay Nutrient Credit Exchange Program (via a private agreement with Honeywell) in order to comply with its TN waste load allocation.

The future market for nitrogen credit purchases is uncertain for two primary reasons. First, the cost for credits is not established past 2017 and future credit availability may be limited. Second, there are current legal challenges to the Clean Water Act's authorization

of pollution trading and offset programs in the final rule promulgated by the US Environmental Protection Agency establishing the Total Maximum Daily Loads for nitrogen, phosphorus, and sediment for the Chesapeake Bay and its tributaries. For these (and other) reasons, HRWTF must implement nitrogen-reduction improvements. These improvements (Phase 2 Improvements) expand on the Alternative 4A-1 Light, Phase 1 Improvements completed in May 2012, which achieved partial segregation of the domestic flow from the industrial flow at the HRWTF.

Phase 2 Improvements - Base Improvements

The Phase 2 Improvements will reduce effluent total nitrogen (TN) to meet the current nitrogen waste load allocation, and address industry requests to add capacity for increased industrial loads. The design flow capacity of this 50 mgd treatment facility will not be increased.

The Phase 2 Improvements include a segregated treatment process to provide year-round nitrification and partial denitrification of the domestic wastewater and a portion of the Honeywell wastewater in a segregated treatment process and add denitrification capacity in the existing UNOX reactor to achieve additional denitrification of the combined segregated waste stream effluent and industrial flows.

A Moving Bed Biofilm Reactor (MBBR) treatment system designed for biological nutrient removal is proposed for the Phase 2 Improvements. The MBBR system was selected because of its resistance to spike loads of inhibitory compounds due both to the biofilm structure as well as the separate BOD oxidation and nitrification fixed film compartments.

The Phase 2 Improvements will allow HRWTF to continue to meet their TN and TP waste load allocations. The segregated treatment approach sets the Limit of Technology (LOT) effluent quality for

HRWTF because only a portion of the flow passes through nutrient removal. The effluent quality is determined by the dilution of the segregated flow into the remaining industrial streams. The segregated treatment system is designed to fully nitrify and partially denitrify. Combining the treated segregated system effluent with the remaining influent flow results in a final effluent total nitrogen concentration of 15.0 mg/L on an annual average basis. The Phase 2 Improvements are not expected to affect effluent total phosphorus.

Components of Phase 2 Improvements

The Phase 2 Improvements will include the following components:

- **Gravelly Run Pump Station (GRPS) and Forcemain Improvements:** The existing GRPS will be replaced with a new pump station having a firm pumping capacity of 7,500 gpm and having the capacity to divert Honeywell flow to both the segregated treatment system and the industrial headworks. The new pump station will include submersible pumps and a channel grinder. The Honeywell flow will be segregated from the VAWCO and RockTenn flows by constructing new force mains parallel to the existing North Interceptor. A new force main will be installed between GRPS and the RockTenn connection to convey the VAWCO flow and a new force main will be installed between the RockTenn connection and the plant site to convey the Honeywell flow.
- **Sodium Bisulfite Facility:** Dechlorination is required to reduce the chlorine residual in the primary effluent prior to entering the MBBR tanks. Sodium bisulfite storage and feed facilities will be installed to accomplish this function.
- **MBBR Influent Pump Station:** Disinfected domestic wastewater will be conveyed to the MBBR treatment system by a new MBBR Influent Pump Station. The pump station will have sufficient capacity to handle the peak design flows and will consist of vertical turbine solids handling pumps. A new MBBR Influent Weir Box will be constructed north of the existing chlorine contact tank effluent channel. This box will have a long weir that will stabilize the water level in the chlorine contact

tanks. Disinfected domestic wastewater will flow through the weir box to the MBBR Influent Pump Station wetwell. The wetwell also receives flow from the MBBR tanks during tank draining through the MBBR tank drain line.

- **MBBR Screenings Facility:** The industrial (Honeywell) flow must be screened before entering the MBBR to avoid plugging the media retention screens. The MBBR Screenings Facility will be attached to the MBBR tanks. The MBBR Screenings Facility includes the MBBR screen influent chamber, mechanical screens and the Gravelly Run/Domestic mixing chamber. New flow-through, perforated plate mechanical screens will be provided. The new screens will be installed in the two new screen channels. Each screen is sized for the peak industrial wastewater flow to allow one screen to serve as a standby unit. Screened material will be conveyed hydraulically via a water flume to screw-type washer and compactor units installed at the top of the MBBR tank. Dewatered screenings will fall through a discharge chute and into a dumpster to be hauled off-site for landfill disposal.
- **MBBR Tanks:** The new MBBR system includes sufficient capacity to treat the 2040 flows and loads. The treatment volume is divided into five tanks and each tank is provided with four treatment cells. The first cell is an anoxic cell, provided with submersible mixers in each tank. The second cell is for BOD removal and is provided with a diffused aeration grid. The third and fourth cells are for nitrification and are also provided with aeration grids.

MBBR effluent is recycled to the head of the tank using axial flow pumps of quantity and size to provide a capacity of 2Q. This recycle flow will increase denitrification and reduce, but not eliminate, alkalinity addition requirements. Facilities to store and feed caustic (sodium hydroxide) as a source of supplemental alkalinity will be provided.
- **Blower Building:** To provide air and mixing in the MBBR process, new blowers will be installed. To span the range of flows anticipated, multiple blowers are provided. The blowers will be located in the Blower Building adjacent to the MBBR tanks.

- **Supplemental Phosphorus Feed System:** Pilot testing indicated the need for periodic addition of phosphorus to the MBBR system to provide adequate nutrients for biological growth. The existing phosphorus solution and phosphoric storage tanks can be used for this purpose. Under the Phase 2 Improvements, metering pumps and small diameter piping will be installed to feed phosphorus to the MBBR influent.
- **Dissolved Air Flotation (DAF) Building:** Excess biological solids discharged from the MBBR tanks must be captured and sent to the solids handling system. To accomplish this, three DAF units will be provided. MBBR effluent will be equally split and will flow by gravity through dedicated lines to the DAF units. Air bubbles are introduced into the unit using aspirating pumps per DAF. DAF effluent will flow through a combined effluent header and return to the denitrification basin influent channel. Solids are drawn from a connection below each unit and returned to the Solids Holding Tanks using progressing cavity pumps.

The DAF Building will house a polymer system used to feed polymer to the DAF units. This system will use dry polymer from super sacks and wet, mix and age the polymer for feed into the DAF units. The caustic storage and feed system for the MBBR tanks will also be located in the DAF Building.

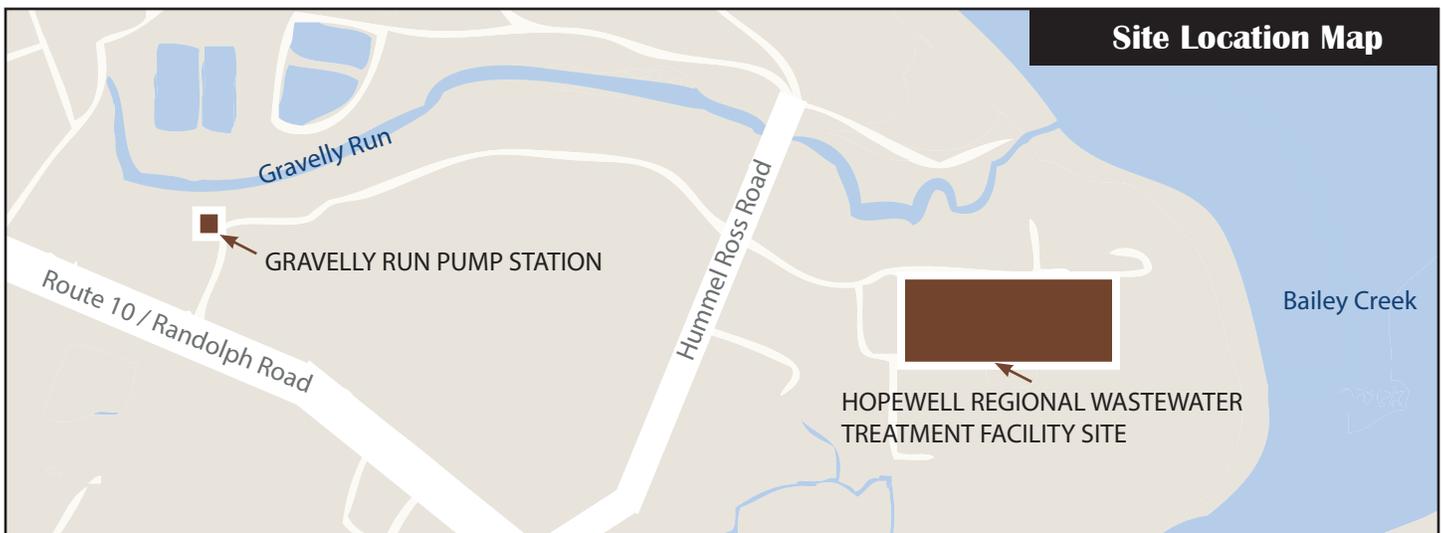
- **UNOX Aeration Tanks:** The existing denitrification basin does not have sufficient capacity to treat the nitrate load expected under the Phase 2 Improvements design basis. The first stage of the UNOX aeration tanks will be converted to an anoxic zone to increase denitrification capacity and meet these expected loads. This will entail installation of mixers.
- **Effluent Re-aeration:** The facility currently has four OxyCharger units installed to provide re-aeration for the final effluent. The re-aeration structure includes space for a fifth unit. To meet the increase flows under the Phase 2 Improvements design basis, the fifth OxyCharger unit will be installed.

For additional project enhancement ideas, please reference Volume II, Section 2a. Some of these project enhancements are required to provide the full design basis 2040 flow and load capacity.

Conceptual Design of Phase 2 Improvements

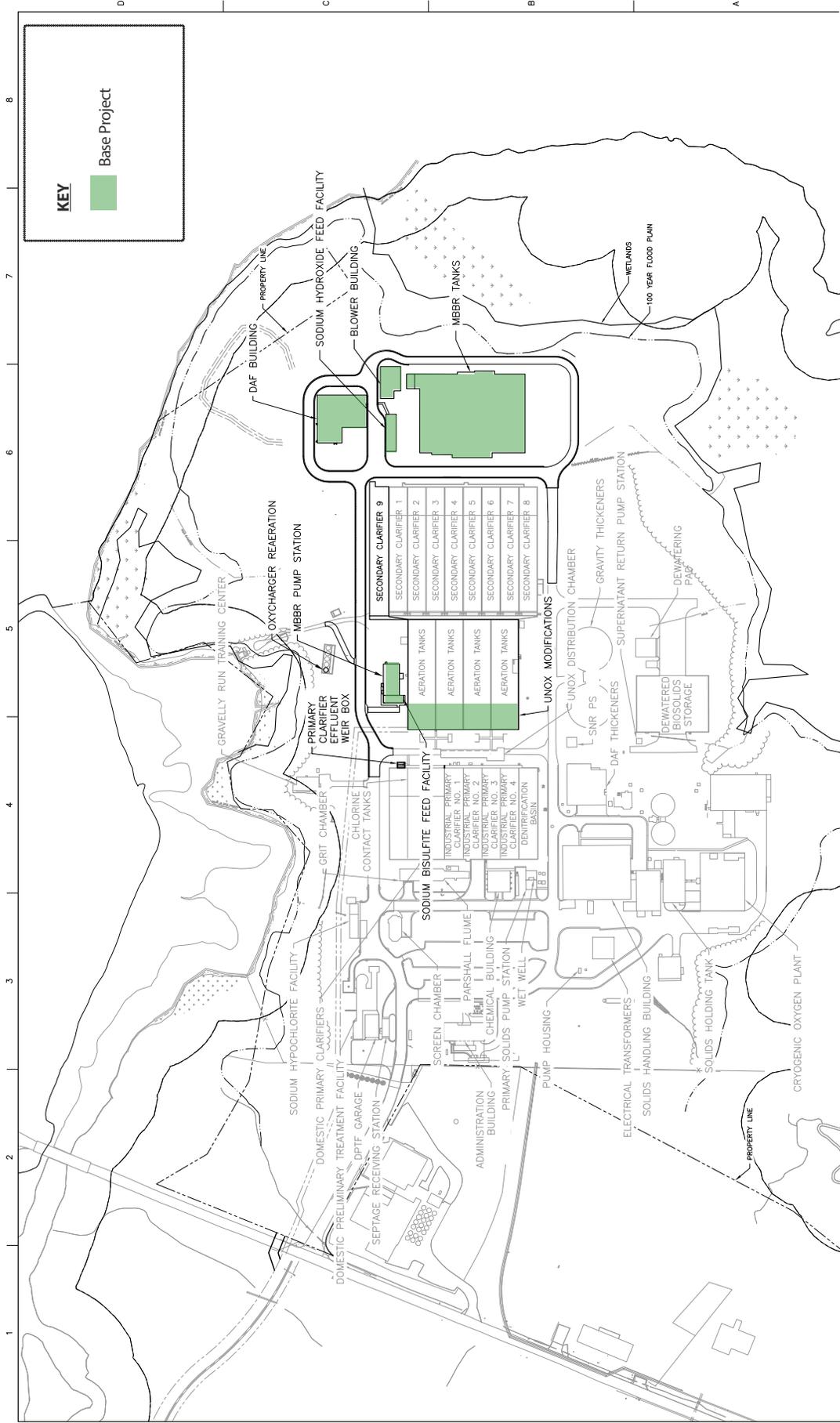
We have provided the following conceptual design drawings on the following pages:

- Site Location Map
- Overall Site Plan - Base Project
- Proposed Process Flow Diagram - Base Project



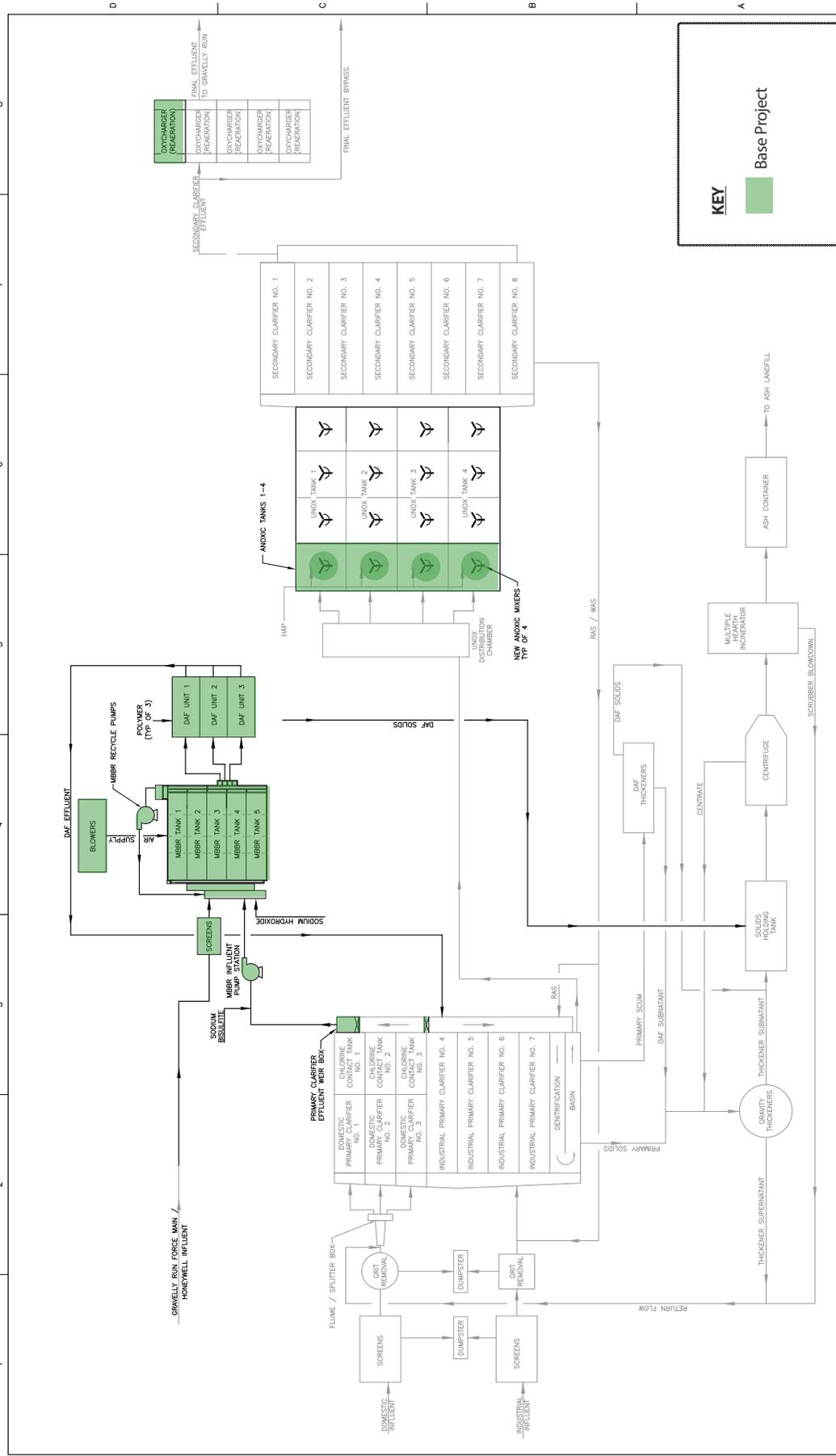


Overall Site Plan - Base Project



HDR <small>HDR Engineering, Inc. 1000 Wisconsin Avenue, Suite 300 Norton, W. 2802</small>	30% DESIGN	Alternative 4A-1 Light, Phase 2 Improvements	OVERALL SITE PLAN														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">PROJECT MANAGER: WILLIAM S. WICZY</td> <td style="width: 50%;">DRAWING NUMBER: G-07</td> </tr> <tr> <td>DESIGNED BY: D. ZIBKE</td> <td>SCALE: 1" = 100'</td> </tr> <tr> <td>DRAWN BY: T. LONKY</td> <td>FILENAME: G-07.dwg</td> </tr> <tr> <td>CHECKED BY:</td> <td>SHEET: 07 OF</td> </tr> </table>	PROJECT MANAGER: WILLIAM S. WICZY	DRAWING NUMBER: G-07	DESIGNED BY: D. ZIBKE	SCALE: 1" = 100'	DRAWN BY: T. LONKY	FILENAME: G-07.dwg	CHECKED BY:	SHEET: 07 OF	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">ISSUE</th> <th style="width: 10%;">DATE</th> <th style="width: 80%;">DESCRIPTION</th> </tr> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">06/26/2013</td> <td>30% DESIGN SUBMITTAL</td> </tr> </table>			ISSUE	DATE	DESCRIPTION	A	06/26/2013	30% DESIGN SUBMITTAL
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ISSUE	DATE	DESCRIPTION															
A	06/26/2013	30% DESIGN SUBMITTAL															

Proposed Process Flow Diagram



<p>HDR Engineering, Inc. 5700 Lake Wright Dr. Norfolk, Va. 23502</p>	<p>30% DESIGN</p>		<p>PROPOSED PROCESS FLOW DIAGRAM</p>	
	<p>PROJECT MANAGER: WILLIAM S. MCDOY DESIGNED BY: D. ZIRKLE DRAWN BY: T. LOREY CHECKED BY:</p>		<p>ALTERNATIVE 4A-1 Light, Phase 2 Improvements</p>	
<p>ISSUE: A DATE: 09/26/2013 30% DESIGN SUBMITTAL</p>	<p>PROJECT NUMBER:</p>		<p>FILE NAME: C-10.rwg SCALE: NONE</p>	
<p>PROJECT NUMBER:</p>		<p>DRAWING NUMBER: G-10</p>		<p>SHEET OF</p>

2b. Identification of Work to be Performed by the City of Hopewell

Identify and fully describe any work to be performed by the City.

It is the express intent of HNP to clearly define the responsibilities that uniquely belong to the City of Hopewell. It is HNP's further intent to limit HNP involvement as much as possible without sacrificing the collaboration needed to successfully implement this project.

This proposal is based on the City of Hopewell retaining the following responsibilities:

- Review and accept PPEA proposal
- Enter into a Comprehensive Agreement with HNP
- Provide approval of construction drawings and specifications
- Provide owner oversight functions during design and construction
- Review design and construction work progress and issue payments per monthly requests
- Secure funding of the project costs through Water Quality Improvement Fund (WQIF) grants and other sources of funds, which may include financing
- Conduct value engineering study to comply with Virginia Department of Environmental Quality (DEQ) WQIF guidelines
- Apply for and obtain DEQ VPDES permit (permit will be in City of Hopewell's name)
- Conduct public hearings per city, county and state regulations, ordinances and laws

2c. Required Permit Approvals

Include a list of all federal, state and local permits and approvals required for the project and a schedule for obtaining such permits and approvals.

Outlined below is a summary of federal, state and local permits and approvals required for this project. A schedule for obtaining these permits and approvals is detailed within the master schedule in Volume II, Section 2f.

Summary of Permitting Requirements

1. City of Hopewell
 - a. Design Phase
 - i. Site Plan Review
 - ii. Statement of Special Inspections
 - b. Construction Phase
 - i. Land Disturbing Activity permit
 - ii. Building Permits
2. Virginia Department of Environmental Quality
 - a. Design Phase
 - i. Application for Certificate to Construct (CTC)
 - ii. Virginia Water Protection Permit (VWPP) via Joint Permit Application
 - b. Construction Phase
 - i. Virginia Stormwater Management Permit (including Stormwater Pollution Prevention Plan)
 - ii. Application for Certificate to Operate
 - iii. Submit updated O&M manual
3. HNP assumes that the Owner will be responsible for all air and VPDES permitting.
4. Early site preparation/foundation package – as indicated in the master schedule, initiation of site preparation work is key to meeting the overall construction schedule. The key steps in obtaining permit approval for this early site preparation work are as described below:
 - a. DEQ will issue a CTC for an early construction package on a design-build project based on submittal of a Final Engineering Report (FER). This is essentially an “enhanced” PER. Therefore, plans and specifications do not have to be complete to obtain a CTC for site preparation/foundations.
 - b. The City of Hopewell will require a site plan review prior to issuing building permit for the early construction package. That site plan review submittal will need to include site civil drawings (including E&SC).
 - c. If a VWPP is required for the project, then that permit would need to be in hand to start any early site preparation work.

2d. Identification of Adverse Social, Economic, and Environmental Impacts

Identify any anticipated adverse social, economic and environmental impacts of the project. Specify the strategies or actions to mitigate known or anticipated impacts of the project. Indicate if any environmental or archaeological assessment has been completed.

Projected Adverse Social Impacts

HNP does not anticipate any significant adverse social impacts. However typical impacts due to construction will be encountered:

Impact	Mitigation Strategy
Increased traffic near job site	<ul style="list-style-type: none"> Establish proper site entry signage and routing plan
Increased mud and dust on area roads	<ul style="list-style-type: none"> Provide truck wash down system at construction entrance

Projected Adverse Economic Impacts

The only adverse economic impact anticipated is associated with the debt service for any borrowed funds and the increased operations and maintenance cost to the HRWTF Commission members. However, reliable and adequate wastewater treatment capacity is essential to the economic health of the City of Hopewell and the HRWTF Commission members. The Phase 2 Improvements project provides for this reliable and adequate capacity.

Projected Adverse Environmental Impacts

An environmental or archeological assessment have not been conducted for the Phase 2 Improvements project. If the City of Hopewell obtains financing through the state revolving loan fund program, then an environmental assessment may be required. HNP does not anticipate any significant adverse environmental impacts. However typical impacts due to construction will be encountered:

Impact	Mitigation Strategy
Potential site erosion and sediment control issues	<ul style="list-style-type: none"> Design and implementation of stormwater control plan
Dust associated with construction activities	<ul style="list-style-type: none"> Plan and implementation of a dust control plan
Minor filling of flood plain	<ul style="list-style-type: none"> Evaluation to ensure no-rise condition
Minor impacts to wetlands for GRPS force main construction	<ul style="list-style-type: none"> Obtain regulatory permits and comply with permit requirements to minimize impacts

2e. Identification of Positive Social, Economic, and Environmental Impacts

Identify the projected positive social, economic and environmental impacts of the project.

Projected Positive Social Impacts

The Phase 2 Improvements project allows the City of Hopewell to continue regional efforts to improve James River and Chesapeake Bay water quality by decreasing the total nitrogen discharged to these water bodies. By contributing to water quality improvement, City of Hopewell residents and guests will continue to enjoy boating, fishing, hiking, and swimming within and around these water bodies.

In addition, this project presents an opportunity for the City of Hopewell and the GREATER Hopewell Coalition ¹ to continue their education process about water quality and provide access to world-class educational resources. The Coalition has previously provided water quality text, flashcards and field guides, authored by Dr. Reese Voshell, and published by McDonald & Woodward Publishing, to the Appomattox Regional Library System for circulation in the region.

Projected Positive Economic Impact

Although the population of the City of Hopewell is only 23,000 inhabitants, HRWTF is unique as it is sized at 50 mgd to also serve a large industrial base essential to the local and state economy. By providing reliable, compliant wastewater treatment, the HRWTF provides infrastructure support critical to the local and state economy.

Approximately 80 percent of the wastewater treated at HRWTF is from five industrial companies: Honeywell-Hopewell Plant, Ashland, RockTenn, Evonik Goldschmidt Corporation and Virginia American Water Company. It also treats the domestic wastewater for the City of Hopewell, portions of Prince George County, Fort Lee Post, Petersburg Federal Correctional Complex and Riverside Regional Jail.

The Hopewell-Prince George Chamber of Commerce ² reported on April 2011 that the five leading manufacturers in the City of Hopewell alone represented \$130,193,700 in local annual payroll for 1,434 employees. Approximately 20 percent of those employees live in the City of Hopewell and the rest are broadly distributed around the region. Mangum Economic Consulting reported in October 2011, through a report commissioned by the HRWTF, that:

- Manufacturing is the City of Hopewell's dominant employer, accounting for one out of every four jobs and paying wages that are almost twice the average wage in the city.
- Manufacturing contributes approximately \$1.6 billion in total annual economic output to the City of Hopewell and surrounding communities.
- Manufacturing is indirectly responsible for supporting 2,907 jobs within the area. Together, the 1,871 direct manufacturing jobs in the City of Hopewell and the 2,907 other jobs supported in the area produce a total employment impact of 4,778 jobs.
- Manufacturing in the City of Hopewell directly and indirectly generates \$127.8 million in federal, state and local tax revenue in the area annually (\$87 million in federal tax revenue and \$40.8 million in state and local tax revenue).

In addition to meeting essential wastewater treatment needs for the Hopewell area, the Phase 2 Improvements will provide opportunities for local jobs, including those at the project job site and through local business participation in supplying materials, equipment and services.

¹ Information gathered from the GREATER Hopewell Coalition website: <http://greaterhopewellcoalition.org/>

² Information gathered from the Hopewell-Prince George Chamber of Commerce website: <http://www.hpgchamber.org/>

Projected Positive Environmental Impact

The HRWTF discharges effluent into Gravelly Run, a receiving stream of the James River, and a tributary of the Chesapeake Bay Watershed. As a Significant Discharger to the Chesapeake Bay, the HRWTF's allowable nutrient discharge loading is capped based on the Chesapeake Bay and its tributaries nutrient control regulations adopted by the Virginia Department of Environmental Quality (Virginia's Water Quality Management Planning Regulation 9 VAC 25-720). This project will contribute to regional efforts to improve James River and Chesapeake Bay water quality by decreasing the total nitrogen discharged.

HRWTF's implementation of Phase 2 Improvements (nitrogen-reduction improvements) will expand on the Alternative 4A-1 Light, Phase 1 Improvements completed in May 2012, which achieved partial segregation of the domestic flow from the industrial flow at the HRWTF. The Phase 2 Improvements will reduce effluent total nitrogen to meet the current waste load allocation, and address industry requests to add capacity for increased industrial flow and load.

2f. Proposed Schedule

Identify the proposed schedule for the work on the project, including sufficient time for the City to review, and the estimated time for completion.

HNP has developed an integrated project schedule that incorporates the design, permitting, construction and commissioning activities of the HRWTF Phase 2 Improvements project. This schedule was developed with a level of detail to reflect the time required and proposed sequence of work for major elements of the project. The overall execution plan of the project is expected to take 31 months to complete and includes the following assumptions:

- Advancement of the design will begin upon issuance of notice to proceed and will include close collaboration between the HNP and the City of Hopewell.
- HNP will work with the City of Hopewell to start early procurement of major equipment and material to assist in the design process and provide early coordination of design and construction work.
- HNP has assumed that mobilization of the on-site management team will begin early during the design phase of the project.
- The schedule assumes that HNP will perform early project set up activities and sitework to prepare the project for construction activity once the design and permitting has sufficiently progressed.
- HNP early on in the project will work with the City of Hopewell plant staff to identify how plant operations will impact design and construction. This will also include underground surveying and test pitting to locate existing utilities and plant process lines which will help coordinate design and construction.
- The UNOX improvements will be sequenced to complete one tank at a time.
- HNP schedule and sequence of activities assumes the proper allocation of self-performing resources to efficiently complete the work. HNP will move these resources throughout the project to maximize production.
- HNP will utilize local subcontractors to construct various buildings throughout the project.
- Start-up and commissioning will be planned early and coordinated with the City of Hopewell to achieve minimal impact to the existing plant operations.

Included on the following page is a schedule summary outlining all major schedule milestones, to view a more detailed schedule, please reference Volume II, Section 2f.

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2g. Contingency Plan

Identify contingency plans for addressing public needs in the event that all or some of the project is not completed according to projected schedule.

HNP's proposed project schedule is based on a construction start in the beginning of 2015. The facilities will be ready for startup by summer of 2016. Final completion is planned for January 2017. This will deliver the project 17 months earlier than conventional delivery as outlined in the PER. The HRWTF will remain in operation throughout construction with no service interruptions.

2h. Allocation of Risk and Liability

Propose allocation of risk and liability for work completed beyond the Comprehensive Agreement's completion date, and assurances for timely completion of the project.

HNP is committed to the successful design and construction of this project. HNP will assume full responsibility for the design, permitting, and construction of the project components, as described herein, and will be responsible for the delivery of the completed project with a guaranteed lump sum price and fixed completion date.

Should the City of Hopewell desire to expand the scope of this proposal or the project scope after a Comprehensive Agreement has been executed, HNP is prepared to negotiate with the City of Hopewell at the appropriate time utilizing the Design Build Institute of America (DBIA) contract number 525 – "Standard Form of Agreement Between Owner and Design-Builder – Lump Sum." This contract is a recognized standard within the industry, providing fair and equitable risk allocation.

HNP will provide via its associated design and construction team members the appropriate bonding and insurance coverage through subordination agreements among the team members. Specifically, HDR Constructors, Inc., and PC Construction Company will provide a performance bond for all construction and HDR Engineering, Inc., and subconsultants will provide adequate normal professional liability insurance for errors and omissions.

2i. Assumptions

State assumptions related to ownership, legal liability, law enforcement and operation of the project and the existence of any restrictions on the City's use of the project.

Ownership

The City of Hopewell will retain ownership of the constructed improvements, as described herein and in associated agreements.

Legal Liability

HDR Constructors, Inc., and PC Construction Company, in their roles as HNP joint venture partners, will be liable for their actions.

Law Enforcement

Law Enforcement responsibilities remain unchanged under this proposal.

Operations

Operation of the wastewater treatment facility and collection system will be the City of Hopewell's responsibility throughout and after construction.

2j. Phased or Partial Openings

Provide information relative to phased or partial openings of the proposed project prior to completion of the entire work.

There are no planned phased or partial openings for this project. The HRWTF will remain in operation throughout construction with no service interruptions.



SECTION 3 - PROJECT FINANCING



SECTION 3 | PROJECT FINANCING

3a. Preliminary Estimate

Provide a preliminary estimate and estimating methodology of the cost of the work by phase, segment, or both.

Estimating Methodology

Due to the confidential nature of our team's estimating methodology, please refer to Volume II, Section 3a.

Project Cost Estimate

Due to the confidential nature of our team's preliminary estimate, please refer to Volume II, Section 3a.

3b. Project Development, Financing and Operation Plan

Submit a plan for the development, financing and operation of the project showing the anticipated schedule on which funds will be required. Describe the anticipated costs of and proposed sources and uses for such funds, including any anticipated debt service costs. The operational plan shall include appropriate staffing levels and associated costs. Include any supporting due diligence studies, analyses or reports.

Please refer to Volume II, Section 3b for this information.

3c. Assumptions

Include a list and discussion of assumptions underlying all major elements of the plan. Assumptions should include all significant fees associated with financing given the recommended financing approach. In addition, complete disclosure of interest rate assumptions should be included. Any ongoing operational fees, if applicable, should also be disclosed, as well as any assumptions with regard to increases in such fees.

Please refer to Volume II, Section 3c for this information.

3d. Risk Factors and Risk Mitigation

Identify the proposed risk factors and methods for dealing with these factors.

Please refer to Volume II, Section 3d for this information.

3e. Identification of Local, State or Federal Resources

Identify any local, state or federal resources that the proposer contemplates requesting for the project. Describe the total commitment, if any, expected from governmental sources and the timing of any anticipated commitment, both one-time and on-going. Such disclosure should include any direct or indirect guarantees or pledges of the City's credit or revenue.

Please refer to Volume II, Section 3e for this information.

3f. Identification of Revenue Sources

Identify the amounts and the terms and conditions for any revenue sources.

Please refer to Volume II, Section 3f for this information.

3g. Identification of Potential Tax-exempt Financing Disqualification

Identify any aspect of the project that could disqualify the project from obtaining tax-exempt financing.

Please refer to Volume II, Section 3g for this information.



SECTION 4 - PROJECT BENEFIT AND COMPATIBILITY



SECTION 4 | PROJECT BENEFIT AND COMPATIBILITY

4a. Community Impacts

Identify community benefits, including the economic impact the project will have on the Commonwealth and the City in terms of amount of tax revenue to be generated for the Commonwealth and the City, the number of jobs generated for Virginia residents and level of pay and fringe benefits of such jobs, the training opportunities for apprenticeships and other training programs generated by the project, and the number and value of subcontracts generated for Virginia subcontractors.

Economic, environmental, and educational community impacts from the Phase 2 Improvements have been documented by The GREATER Hopewell Coalition (<http://greaterhopewellcoalition.org>). In particular, HNP sees the following key community impacts for Phase 2 Improvements:

- Ensure reliable and compliant wastewater treatment for City of Hopewell’s residents, industrial manufacturers, and businesses into the foreseeable future. These improvements will allow the industrial manufacturers and businesses to stay and grow in the area. The Hopewell-Prince George Chamber of Commerce reported on April 2011 that the five leading manufacturers in Hopewell alone represented \$130,193,700 in local annual payroll for 1,434 employees. Approximately 20 percent of those employees live in the City of Hopewell and the rest are broadly distributed around the region.
- Improve James River and Chesapeake Bay water quality by decreasing the total nitrogen discharged to these water bodies. By contributing to water quality improvement, City of Hopewell residents and visitors will continue to enjoy boating, fishing, hiking, and swimming within and around these water bodies.
- The City of Hopewell qualifies as an “economically distressed” locality since the City’s unemployment rate for the preceding year is at least 0.5 percent higher than the average statewide unemployment rate. For 2012, the statewide average unemployment rate was 5.9 percent. As of August 2013, the Hopewell unemployment rate is 8.6 percent. Thus, Hopewell meets the criteria as an “economically distressed” locality. This project will improve the unemployment rate as it provides opportunities for local jobs, including those at the project job site and through local business participation in supplying materials, equipment and services.



Phase 2 Improvements will allow the industrial manufacturers and businesses to stay and grow in the area.



Phase 2 Improvements will Improve James River and Chesapeake Bay water quality



Phase 2 Improvements will provide opportunities for local jobs, including those at the project job site

4b. Public and Government Support/Opposition

Identify any anticipated public support or opposition, as well as any anticipated government support or opposition, for the project.

It is anticipated that generally this project will have positive public support and will be supported by the GREATER Hopewell Coalition and Hopewell-Prince George Chamber of Commerce.

4c. Strategy and Plan to Inform General Public

Explain the strategy and plan that will be carried out to involve and inform the general public, business community, local governments, and governmental agencies in areas affected by the project.

It is anticipated that HNP will provide the City of Hopewell with project updates which can be posted on the City of Hopewell’s website. In addition, HNP can assist with press releases throughout the design and construction.

4d. Compatibility with Economic Development Efforts

Describe the compatibility of the project with local, regional, and state economic development efforts.

The Phase 2 Improvements are consistent with local, regional, and state economic development efforts. The table below outlines these economic development efforts and where the Phase 2 Improvements can assist.

Level	Primary Focus Areas ²	Phase 2 Improvements Will Help
Local/Regional/State	Revitalize declining commercial and industrial areas and obsolete facilities through redevelopment and rehabilitation	
Local/Regional/State	Retain and expand existing businesses and industries	X
Local/Regional/State	Develop adequate infrastructure capacity to support existing and new development, including closer coordination between economic development and capital improvements programming	X
Local/Regional/State	Develop sites for expansion of existing commercial and industrial uses and attraction of new establishments and projects	X
Local/Regional/State	Attract industry that will enhance the local economy and is consistent with structural changes occurring in the national economy	X
Local/Regional/State	Expand visitor and tourism activity	X

² *Courtesy of Hopewell’s Department of Economic Development*

4e. Compatibility with City Plans

Describe the compatibility with the City’s comprehensive plan, infrastructure development plans, and capital improvements plan.

HNP believes the Phase 2 Improvements are compatible with the City of Hopewell’s Comprehensive Plan, adopted by the Hopewell City Council, December 11, 2001.



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