P3 Financial and Transactional Advisor

MOYOCK REGIONAL WASTEWATER TREATMENT PLANT

CURRITUCK COUNTY

A proposal from the multidisciplinary advisory team comprising:

Project Finance Advisory Limited (“PFAL”)
Hawkins Delafield Wood
WSP

March 2021

PFAL Project Finance Advisory Ltd.

March 8 2022

Crystal Owens
Contract Purchasing Agent
The County of Currituck, North Carolina
Via email

Proposal to Provide Public-Private Partnership (P3) Financial and Transaction Advisor Services

Dear Ms Owen,

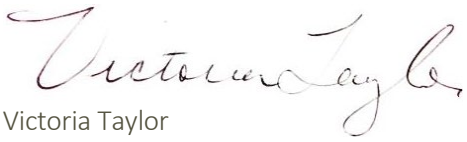
On behalf of Project Finance Advisory Limited ("PFAL"), I am pleased to provide our proposal to act as your P3 Financial and Transaction Advisor for Currituck County's ("the County") Moyock Regional Wastewater Plant Project (the "Project").

PFAL has joined with WSP and Hawkins Delafield Wood to assemble an exceptionally well-qualified team. This team spans the essential areas of infrastructure procurement: commercial/financial, technical, and legal expertise. Our team has a significant record of accomplishment in the wastewater sector and has successfully navigated a wide range of procurement challenges in the wastewater sector and in the broader infrastructure arena. The team is well positioned to address the scope of services outlined in your Request for Proposals.

I will be personally responsible for overseeing this assignment for PFAL and the wider team. I have over 21 years' experience in infrastructure advisory work, and I have successfully closed more than $30 billion in infrastructure transactions in the US, Canada, Europe, and the Middle East. I will ensure that the full resources of our team are deployed to deliver a compelling procurement strategy and to support the County in the efficient execution of this procurement strategy.

If you have any questions, please do not hesitate to get in touch. We thank you for the opportunity to work with you and look forward to hearing from you.

Sincerely,



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PFAL

1. FIRM PROFILE

Project Finance Advisory Limited ("PFAL") leads a multi-disciplinary team of highly experienced procurement experts ready to address the issues impacting the Moyock Regional Wastewater Treatment Plant ("the Plant") and to support Currituck County ("the County") in the selection and execution of the optimal procurement strategy. The team comprises:

- PFAL – a registered municipal financial advisor and the proposed prime contractor, advising on procurement strategy and execution as well as financing issues;
- WSP – a leading engineering and professional services firm, advising on technical issues as they impact the procurement strategy and approach; and
- Hawkins Delafield Wood – a law firm noted for its groundbreaking work in public-works procurement, especially in the water and wastewater industry, advising on legal matters, procurement documentation and contract negotiation and execution.

Further detail on each of these constituent firms is provided below:

PFAL Project Finance Advisory Ltd.

PFAL is a financial and commercial advisor that specializes in providing federal, state and municipal entities with strategic and tactical advice on how best to optimize and deliver their infrastructure projects. PFAL opened its US office in March 2013. Its mission is to provide independent advice and assistance to public agencies to help them think strategically about how to efficiently structure, manage, and competitively deliver complex infrastructure projects. The team's core competencies include affordability, feasibility and value-for-money analysis, financial capacity analysis, identifying alternative sources of revenue, procurement strategy and execution, project documentation and financial modeling for infrastructure projects. PFAL personnel have directly relevant experience performing this work as advisors to governments, as loan officers at major financial institutions, and as financial advisors to private sector clients.

PFAL is driven to assist in the delivery of high-quality, efficiently managed infrastructure using alternative delivery methods, and as individuals, we have the technical expertise and experience that demonstrate that we know how to do exactly that. We frequently collaborate with lawyers, architects, designers, and engineers to provide our clients with holistic solutions to project efforts.

PFAL's team members have successfully structured and executed projects large and small with a combined value of $150 billion in the US. PFAL is the recipient of the following awards:

- 2019 Social Infrastructure Deal of the Year – P3 Bulletin (Howard County Courthouse)
- 2019 Financial Structure of the Year – P3 Bulletin (Howard County Courthouse)
- 2019 Transit Project Silver Medal – P3 Bulletin (MBTA Automated Fare Collection)
- 2016 Social Infrastructure Deal of the Year Nominee – P3 Bulletin (University of Kansas Central District Development, Kansas)

- 2015 National Council for Public Private Partnerships Innovation Award, 2008 Project Finance Magazine North America Deal of the Year, 2007 Project Finance Magazine Transportation Deal of the Year (Capital Beltway Express Lanes, Virginia)

PFAL is a registered municipal financial advisor with the MSRB and the SEC. PFAL is a certified DBE, SBE, WBE, SLB, EBE, VSBE and SB (Micro) entity.

WSP has been one of the world's leading engineering and professional services firms since 1885. Dedicated to serving local communities, WSP is a team of engineers, planners, technical experts, strategic advisors and construction management professionals. A global practice of more than 48,000 people, including 9,500 staff in 150 offices across the U.S., and 900 specialists in water and environment, will partner with the County of Currituck to help the community prosper. WSP offices in Virginia Beach, Raleigh, and Charlotte stand ready to support our national business line expertise drawn from across the company presented here.

WSP has developed field-proven best practices to implement projects successfully under a wide range of traditional and alternative delivery methods, including a track record of performance, successfully structuring and delivering public-private partnerships (P3) across the water and environmental, energy building, and transportation sectors. Additionally, WSP has a portfolio of experience spanning from planning, design, and construction management of large and small diameter pipelines, sewers, outfalls, water and force mains, separate and combined collection systems, tunnels, pump stations, flow control facilities, as well as special structures related to the transmission and conveyance of water, wastewater, and stormwater.

WSP has a long-standing industry leading presence in providing technical and procurement advisory services for municipal water/wastewater utilities offering the full range of project planning, collaborative project delivery procurement development, and construction monitoring services. As part of the PFAL team, WSP is uniquely positioned to perform services for this project on behalf of the County of Currituck utilizing our deep understating combined across the fields of water, wastewater, and alternative project delivery methods.

Hawkins is a 90-lawyer public works procurement, contract and finance legal boutique that is uniquely qualified among law firms for this work. Ten of our lawyers practice full time as owner's lead counsel in the alternative project delivery and P3 field. Hawkins has represented public agencies on over 250 projects in 25 states delivered using the design-build, design-build-operate-maintain, design-build-finance-operate-maintain (P3) and other alternative delivery methods in all infrastructure sectors, a number which is unsurpassed among American law firms.

The firm has extensive expertise and experience in alternative project delivery and P3 transactions both regionally and nationally, has maintained a substantial specialized legal practice for more than 25 years in this field, is widely recognized as an industry leader, and is fully capable of performing all required special counsel legal advisory services to the highest standards. Hawkins is a firm of transactional attorneys, and

the heart of its practice is representing state and local governments in alternative project delivery, P3, public contract, and public finance matters.

Hawkins is the leading law firm in the nation in the water/wastewater alternative delivery and P3 sector. We have represented local governments on over 100 water/wastewater alternative delivery P3 projects. Many of the contract concepts and forms used across the country are based upon our precedents. Because Hawkins only represent state and local governments, Hawkins is never in danger of experiencing a conflict of interest with any of the firms that propose to provide services in this sector. Projects that Hawkins has helped procure have been of all sizes ranging from 1 mgd to over 100 mgd and of all technologies. The breadth and depth of our experience in this sector is unmatched by any other law firm.

While our practice is national, we have extensive experience in North Carolina, having assisted New Hanover and Wake Counties with alternative delivery and P3 projects including waste-to-energy (New Hanover County DBOM), landfill gas-to-energy (Wake County P3) and a new landfill project (Wake County DBOM), and the City of Greensboro with the procurement of recycling services. Hawkins recently opened an office in Raleigh and one of our practice group's experienced senior associates lives and works in Durham.

These firms have a history of successful collaboration with each other, whether this is for the same client or across the negotiating table, representing different clients. This history of collaboration spans a number of infrastructure and water-related projects. For example, PFAL and Hawkins have worked on the Howard County Courthouse Project, MD, on the Gilcrease Expressway West Project, OK, and on the Rural Roads Project, OK (each for different clients). Hawkins and WSP are currently collaborating on the Carlsbad Desalination Plant, CA, and on the Kalaeloa Seawater Desalination Facility Project, HI as well as a number of projects in the last decade including: Wilsonville Wastewater Project, OR, County of Hawaii Waste-to-Energy, HI, Hialeah Desalination Plant, FL.

A. FIRM BACKGROUND

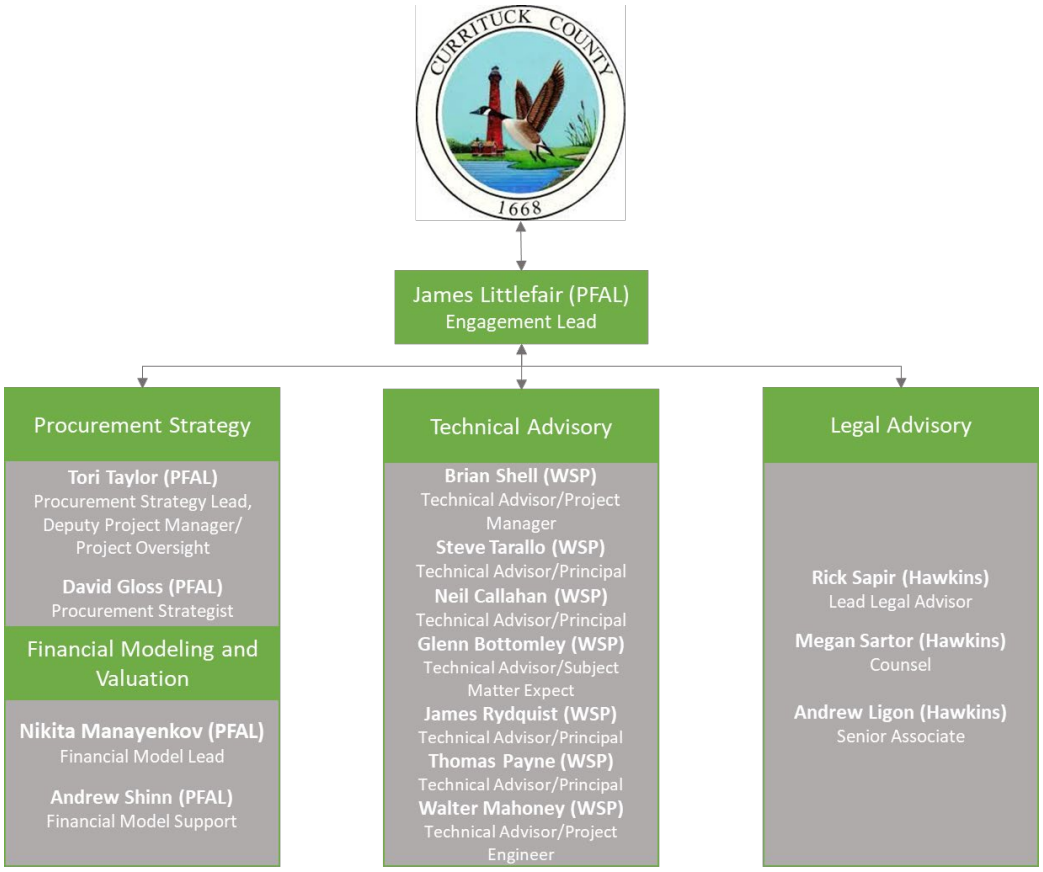
The table below addresses the background questions in relation to the proposed prime contractor, PFAL.

Requirements	
Legal Name of Firm	Project Finance Advisory Limited
Date of Firm Formation	2013
Legal Business Description	Corporation
Principal Office Location	1915 N Crescent Heights Blvd, Los Angeles, CA 90069
Working Office Location	WSP offices in Virginia Beach and the Hawkins offices in Raleigh will be available to the team for in-person meetings and project delivery purposes
Name and contact information of Authorized Representative	James Littlefair, Managing Director Address: 1915 N Crescent Heights Blvd, Los Angeles, CA 90069 Tel: 917 251 6199 Email: james.littlefair@pfalimited.com
A summary of litigation, claims, or contract disputes	Not applicable
Statement of conflicts	Not applicable
Statement of availability and commitment	PFAL is committed and its principal and professionals are available to undertake the necessary tasks to execute the agreed scope of work for this Project. PFAL will manage its resources and those of its wider team of subcontractors to ensure that all tasks are executed in a timely fashion and to the level of expected quality. PFAL is currently engaged on a small number of other projects but does not envision any capacity issues in relation to fulfilling its prospective obligations with Currituck County for this Project.

B. ORGANIZATIONAL STRUCTURE

The graphic below summarizes the staffing and organizational structure the PFAL-led team will deploy for the Project.

Figure 1 - Team Organization Structure



Engagement Lead, James Littlefair, will be responsible for the management and integration of the various work streams and will be the County's day-to-day contact for team's work.

The Procurement Strategy Workstream will be led by Tori Taylor (also Deputy Project Manager with engagement oversight responsibilities), who will be supported by David Gloss. This workstream will be responsible for project diligence and procurement analysis and will make recommendations on procurement strategy in addition to supporting the County in the execution of this strategy. Underpinning much of this work will be the Financial Modeling and Valuation Workstream. This workstream will be led by Nikita Manayenkov and supported by Andrew Shinn and will provide the quantitative analysis to support procurement decision making.

The Technical Advisory Workstream will be led by Brian Shell and he will be supported by subject matter experts Steve Tarallo, Neil Callahan, Glenn Bottomley, James Rydquist, Thomas Payne, and Walter Mahoney as necessary. This workstream will be responsible for the technical review and inputs incorporated into the

procurement diligence and any modeling work. This workstream will also support the drafting of any technical aspects of the Project documentation.

The Legal Advisory Workstream will be led by Rick Sapir and will be supported by Megan Sartor and Andrew Ligon. This workstream will translate the procurement strategy into the associated procurement documentation as well as providing a vital role in supporting the County with respect to the negotiation and execution of this documentation.

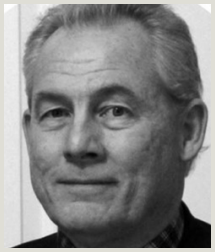
C. TEAM EXPERIENCE – SUMMARY MATRIX

The table below provides a summary of the team's experience with traditional, P3 and alternative forms of procurement, along with asset acquisition/disposal in the wastewater, water, solid waste, organic waste and other related sectors. Detailed resumes for each team member can be found in Appendix IV.

	Years' Experience	Expertise	Selected Relevant Projects
James Littlefair, Engagement Lead (Managing Director, PFAL) 	21+	James Littlefair is a former commercial banker with over 21 years of experience structuring and executing procurement solutions for capital-intensive infrastructure projects. His expertise covers: procurement strategy, financing and funding, intercreditor matters, tax-exempt structures, rating agency process, availability-based deals, power, renewables and water, wastewater, waste-to-energy projects.	▪ York Wastewater Acquisition ▪ Aquarion Acquisition ▪ Acquatrine Package C P3 ▪ LASAN, Clean Water Campus ▪ Aberdeen Wastewater P3
Tori Taylor, Deputy Project Manager, Procurement Strategy Lead, Project Oversight (President/CEO, PFAL) 	21+	Victoria (Tori) has over 21 years of experience in infrastructure and project finance. She has personally led the execution, analysis, and management of nearly $30 billion worth of infrastructure transactions using traditional and innovative financing strategies. She has extensive experience in infrastructure finance advisory and credit assessment, having acted as a financial advisor and lender to multiple major transportation projects across the US.	▪ Stanislaus Regional Water Authority Surface Water Supply Project ▪ San Joaquin County Solid Waste Division ▪ LA Department of Sanitation, Clean Water Campus

	Years' Experience	Expertise	Selected Relevant Projects
David Gloss, PE, Procurement Strategist (Vice President, PFAL) 	16+	A former civil engineer, David also brings a wealth of experience in early-stage project development and feasibility, specializing in project management, risk analysis, financing, funding and delivery alternatives analysis. As a banker and civil engineer, he has worked primarily on projects across North America in nearly all infrastructure sectors including water, wastewater, energy, vertical infrastructure (courthouses and government buildings) and transportation (road, rail, airports).	▪ Lower Colorado River Authority ▪ Fargo-Moorhead Flood Diversion Project ▪ Connecticut Waste-to-Energy
Nikita Manayenkov, Financial Modeling Lead (Manager, PFAL) 	8+	Nikita is a financial advisor with experience providing financial advice, business planning and due diligence advice to public and private sector clients on major infrastructure and real estate projects. He has been involved in projects in the USA, Australia, and the Middle East, performing financial modelling and providing financial strategy, structuring and commercial advice.	▪ LA Department of Sanitation, Clean Water Campus ▪ LA River Revitalization ▪ Sonoma County Civic Center
Andrew Shinn, Financial Modeler (Associate, PFAL) 	4+	Andrew is a financial advisor with experience providing financial advice, due diligence advice, and execution assistance to public and private sector clients on major social and transportation infrastructure projects. He has been involved in projects across North America performing financial modelling and providing financial strategy, structuring and commercial advice.	▪ Connecticut Waste-to-Energy ▪ DC Streetlights Modernization ▪ A-25 Toll Road

	Years' Experience	Expertise	Selected Relevant Projects
Brian Shell, PE, Technical Advisory Project Manager (Project Manager, WSP) 	11	Brian's focus is on providing oversight and technical input, especially as clients work to select the optimal alternative project delivery method for their project with much of his technical experience being in the wastewater field. Because he understands both the commercial and technical aspects of a wastewater alternative delivery project or valuation, he's well-suited to coordinate the subject matter experts that make up the Currituck County P3 Advisory technical team.	▪ WSSC Piscataway WWTP Facility Plan ▪ Confidential Client Desalination P3 Due Diligence ▪ Kalaeloa Seawater Desalination Facility DBOM Project
Steve Tarallo, PMP, Technical Advisor (Principal, WSP) 	33	Steve has had an extensive career in the wastewater industry in the Chesapeake region, focusing his expertise on energy efficiency and business case analysis. He also serves as the business line leader for WSP's water business in the Southern States district and will be able to ensure that the appropriate resources are directed to this important engagement with Currituck County.	▪ Hampton Roads Sanitation District Biosolids Resource Recovery Master Plan ▪ Washington Suburban Sanitary Commission Strategic Energy Plan ▪ Two Bridges Sewerage Authority Wastewater Treatment Plant Capital Improvement Master Plan
Neil Callahan, ENV SP, Technical Advisor (Principal, WSP) 	44	Neil's storied career has spanned five decades and for nearly all of it he has been involved in advising or leading public utilities and private water companies. He has advised nearly 50 municipalities who have faced the challenges that Currituck County is experiencing.	▪ Replacement of Contract Operator for an Existing Wastewater Treatment System, City of Danville/Virginia ▪ Western Carolina Regional Sewer Authority (WCRSA) Piedmont WWTP

	Years' Experience	Expertise	Selected Relevant Projects
			Alternative Delivery Analysis ▪ Water System Evaluation/ Acquisition, South Central Connecticut Water Authority/ Connecticut
Glenn Bottomley, PE, F.ASCE, Technical Advisor (Subject Matter Expert, WSP) 	36	Glenn is the local business lead for water in WSP's Virginia Beach office and has worked on a number of signature projects in the area. His knowledge of the locale, peer utilities, and key stakeholders in the region will be useful as the WSP team ramps up to work on this important project.	▪ South Battlefield Boulevard Sewer Conversion Project – Chesapeake, VA ▪ HRSD System Metering, Phase IV ▪ Virginia Beach North Beach Stormwater, Pump Station and Ocean Outfall
James Rydquist, P.E., Technical Advisor (Principal, WSP) 	28	James serves as WSP's national leader for wastewater treatment. He coordinated frequently with WSP's experts nationally and globally and so is well poised to serve as the lead of the wastewater SMEs for this engagement.	▪ Downriver Wastewater Treatment Facility (DWTF) Clarifier Upgrades ▪ Electrical and Instrumentation Design for THP Residual Treatment at the Pontiac WWTP ▪ RTQ 54-inch PCCP Force Main Rehabilitation, Design Build, Miami, FL

	Years' Experience	Expertise	Selected Relevant Projects
Thomas Payne, PE, Technical Advisor (Senior Subject Matter Expert, WSP) 	26	Tom has nearly three decades of technical experience in the water resources realm. His advanced understanding of wastewater process engineering will allow the WSP to understand the issue facing Currituck County and how best to structure the procurement to solve them.	▪ Hines Energy Complex Wastewater Treatment Plant Replacement ▪ Eleanor Slater State Hospital, Zambarano Wastewater Treatment Unit ▪ Disney Cruise Lines, Eleuthera Island, Wastewater, Potable Water, and Reuse Design
Walter Mahoney, Technical Advisor (Project Engineer, WSP) 	30	Walter is experienced in construction phase services for municipal wastewater projects including construction management, construction inspection, project startup and commissioning, and operations and maintenance (O&M). Coupled with his background in design, he will be able to understand the challenges facing any new operator of the MRWTP.	▪ Hines Energy Complex Wastewater Treatment Plant Replacement ▪ Eleanor Slater State Hospital, Zambarano Wastewater Treatment Unit ▪ Disney Cruise Lines, Eleuthera Island, Wastewater, Potable Water, and Reuse Design
Eric (Rick) J. Sapir, Lead Legal Advisor (Partner, Hawkins) 	35	Rick is a partner in the firm's public-private partnership and alternative delivery practice group. Rick has worked exclusively as owner's representative and has helped structure, procure, draft and negotiate contracts involving P3s and every form of complex alternative delivery approach. Rick has served as lead negotiating counsel for over 100 engagements on complex infrastructure projects delivered pursuant to P3 and alternative delivery contracting methods. His practice	▪ Lake Oswego, OR ▪ Washington Borough, NJ ▪ Long Hill Township, NJ

	Years' Experience	Expertise	Selected Relevant Projects
		spans North America where he has served as special counsel for the development of environmental facilities in over 20 States, three Provinces and two Territories. Rick's services regularly include advising on project planning and delivery matters, structuring of the procurement to ensure compliance with law and a fair and transparent competition, preparation of procurement documents, helping clients review, clarify, understand and evaluate proposals, and the drafting and negotiation of the key project agreements.	
Megan I. Sartor, Counsel (Counsel, Hawkins) 	13	Megan specializes in the procurement and implementation of infrastructure projects on public-private partnership and alternative delivery bases in the solid waste management, recycling, renewable energy, residuals, water and wastewater treatment sectors. Megan develops and drafts various requests for qualifications, requests for proposals, requests for bids and other procurement documents, and in the drafting and negotiation of various P3 agreements.	▪ Lake Oswego, OR ▪ Washington Borough, NJ ▪ Long Hill Township, NJ
Andrew Ligon, Associate (Associate, Hawkins) 	7	Andrew focuses his practice on the procurement and implementation of public infrastructure and construction projects across a range of project delivery models in the social infrastructure, transportation, water and wastewater treatment, renewable energy, cogeneration, and solid waste sectors.	▪ Lake Oswego, OR ▪ Howard County Courthouse, MD ▪ Clackamas County Courthouse, OR

2. EXPERIENCE

The PFAL team will draw on the broadest and deepest cross section of experience. This range of experience reinforces the team's ability to identify the optimal procurement strategy and, crucially, facilitates its successful execution.

The constituent firms of the team have a successful history of collaboration. This history of collaboration spans a number of infrastructure and water-related projects. For example, Hawkins and WSP are currently collaborating on the Carlsbad Desalination Plant, CA, and on the Kalaeloa Seawater Desalination Facility Project, HI as well as a number of projects in the last decade including: Wilsonville Wastewater Project, OR, County of Hawaii, Waste-to-Energy, HI, Hialeah Desalination Plant, FL. PFAL and Hawkins have worked on the Howard County Courthouse Project, MD, on the Gilcrease Expressway West Project, OK, and on the Rural Roads Improvement Program, OK (each for different clients).

A. PROJECT EXPERIENCE – SUMMARY MATRIX

The following table summarizes the team's experience in a range of dimensions relevant to the Project:

PROJECT EXPERIENCE MATRIX	Water/Wastewater	Organic Waste	Sale/Valuation	P3	Procurement	Design/Construction Insights	Operations Insights
Stanislaus Regional Surface Water Supply Project, CA	✓				✓	✓	
Lower Colorado River Authority, TX	✓		✓				
York Wastewater Acquisition, PA		✓		✓		✓	✓
Sonoma County Organic Waste Diversion, CA		✓		✓		✓	✓
Sacramento County, City of Sacramento, City of Folsom – Organic Waste Diversion Project, CA		✓		✓		✓	✓
Sonoma County Organic Waste Diversion, CA		✓		✓		✓	✓
Aberdeen Wastewater, UK	✓			✓			
Aquatrine Package C, UK	✓			✓			

PROJECT EXPERIENCE MATRIX	Water/Wastewater	Organic Waste	Sale/Valuation	P3	Procurement	Design/Construction Insights	Operations Insights
Aquarion Acquisition, New England	✓		✓				
Fargo-Moorhead Flood Diversion, ND	✓		✓		✓	✓	✓
Los Angeles Dept of Sanitation, Clean Water Campus, CA				✓	✓		
RusHydro, International			✓				
Prince George's County Waste-to-Energy, MD		✓					
Connecticut Waste-to-Energy, CT		✓					
Replacement of Contract Operator for an Existing Wastewater Treatment System, City of Danville, VA	✓			✓	✓		
Confidential Due Diligence for Desalination Asset – West Coast, US	✓		✓	✓	✓	✓	✓
Kalaeloa Seawater Desalination Facility Project - City of Honolulu, HI	✓			✓	✓	✓	✓
Procurement Advisory Services for the Wastewater Treatment Plant Improvements – City of Wilsonville, OR	✓				✓		
Procurement Advisory Services for the Piedmont Regional Wastewater Treatment Plant - WCRSA, Greenville, SC	✓				✓		
Procurement Advisory Services - City of Rialto, CA	✓	✓		✓	✓	✓	✓
Procurement Services for an APD Procurement of an Industrial Seawater Desalination – City of Corpus Christi, TX	✓			✓	✓		

PROJECT EXPERIENCE MATRIX	Water/Wastewater	Organic Waste	Sale/Valuation	P3	Procurement	Design/Construction Insights	Operations Insights
Design Build Operate Owners Advisory Services for the Lions Gate Secondary Wastewater Treatment Plant – Vancouver, BC	✓			✓	✓		✓
Wastewater Treatment Program – Capital Region District, Vancouver, BC	✓			✓	✓	✓	
Organic Waste Processing Installations – City of Montreal, QB	✓	✓				✓	
Canoas Wastewater Treatment Plant – Soacha, Colombia	✓			✓	✓	✓	✓
Risk Matrices of Priority Asset Classes – Ottowa, ON	✓	✓		✓	✓		
New Wastewater Treatment Facility, Lake Oswego, OR	✓			✓	✓	✓	
Washington Borough, Wastewater Treatment Facility DBO, NJ	✓			✓	✓	✓	✓
Sale of Wastewater Treatment System, Township of Long Hill, NJ	✓		✓		✓		✓
New Hanover County Waste-to-Energy Facility, NC				✓	✓	✓	✓
Rahway Valley Sewerage Authority Specified Feedstock Enterprise Contact, NJ	✓	✓		✓	✓	✓	✓
Rockland County Wastewater Project, NY	✓				✓	✓	✓
Spokane Wastewater Project, WA	✓					✓	✓
Juarez, Wastewater Project, Mexico	✓			✓	✓	✓	✓
Guayaquil, Wastewater Project, Ecuador	✓			✓	✓	✓	✓

B. PROJECT EXPERIENCE – DETAILED EXAMPLES

The following 12 examples are drawn from the broad cross section of the team's collective experience:

#1 STANISLAUS REGIONAL SURFACE WATER SUPPLY PROJECT

Role: Financial Advisor (Subcontractor) to West Yost
Location: Stanislaus County, CA
Client: West Yost/Stanislaus Regional Water Authority
Status: In operations
Total Project Cost: $275 million
Date of Engagement: Sept 2018
Key Staff: PFAL/Tori Taylor

SCOPE DESCRIPTION

PFAL was engaged to assist the Water Authority's program manager in developing and issuing a procurement for a design build contract that will help improve consistency in water supply to Stanislaus County. As part of this work PFAL developed the financial criteria for respondents, reviewed financial submissions, and provided analysis and opinions on the financial strength of the respondents.

RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

Evaluation services, assisting Water Authority review of qualifications vetting and selection of preferred partners.

CLIENT REFERENCE

Name: Lindsay Smith
Title: Vice President
Phone: 530.792.3247
Email: lsmith@westyost.com

#2 YORK WASTEWATER ACQUISITION

Role: Financial advisor to bidder
Location: York City, PA
Client: Ullico/Veolia
Status: Process Suspended
Total Project Cost: Confidential
Date of Engagement: Sept 2016
Key Staff: PFAL/James Littlefair

SCOPE DESCRIPTION

Scope Description: PFAL's acted as financial and strategic advisor to a private consortium comprising Ullico Infrastructure and Veolia for prospective purchase (on a concession basis) of this wastewater asset in York City, PA. PFAL's work included development of the financial model and valuation, financial structure optimization, review of the concession agreement, and bid strategy.

RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

Project bid strategy, applicable financing structures, market appetite, financial modeling.

CLIENT REFERENCE

Name: Reed Singer
Title: Managing Director
Phone: 312 420 0842
Email: rsinger@ullico.com

#3 MISCELLANEOUS ORGANIC WASTE DIVERSION PROJECTS

Role: Financial advisor to bidder
Location: Sacramento and Sonoma Counties, CA
Client: Star America/Kiewit Development/Suez
Status: In bid (currently in hiatus)
Total Project Cost: $Confidential
Date of Engagement: June 2019
Key Staff: PFAL/James Littlefair

"PFAL provided enormous value to our team bidding for organic waste to energy projects, utilizing their expertise in project finance and PPP transactions, by applying problem-solving skills to optimize our bid and by adhering to a tight timeline with dedication"
Kamil Seidl, Star America

SCOPE DESCRIPTIONS

PFAL is leading the advisory mandate to the teams for the City and County of Sacramento's and the Sonoma County's organic waste diversion projects. These projects utilize some of the same anaerobic digestion technology as wastewater treatment plants. These mandates require PFAL to explore a range of financing alternatives, including low-cost financing under a number of California state programs (CalRecycle, California Pollution Control et al) as well as extensive financial modeling to determine the optimal economic structures.

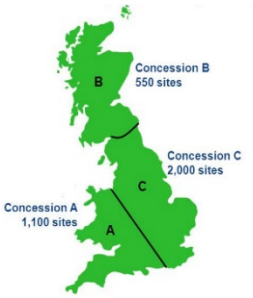
RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

Project bid strategy, financing structures, market appetite, financial modeling.

CLIENT REFERENCE

Name: Kamil Seidl
Title: Executive Director
Phone: 516 882 4097
Email: kseidl@starinfrapartners.com

#4 MISCELLANEOUS UK WATER PROJECTS: (i) AQUATRINE PACKAGE C; (ii) ABERDEEN WASTEWATER PROJECT



Role: Lender
Location: UK
Client: Ministry of Defence/Aberdeen Environmental Services
Status: Operational
Total Project Cost: £185 million/£100 million
Date of Engagement: 2000-2006
Key Staff: PFAL/James Littlefair

SCOPE DESCRIPTIONS

(i) The Aquatrine initiative comprises the Ministry of Defence's country-wide water and wastewater P3 program in the UK wherein the Aquatrine private-partners undertook significant upgrades to inherited wastewater systems as well as providing wastewater services and management of environmental risk across the MoD estate allowing the MoD to focus on its core activities. This was achieved by utilizing water-industry expertise to improve the MoD's performance in environmental compliance and sustainability over the contract term. Aquatrine covers circa 4,000 sites on the MoD Estate.

Specifically, Aquatrine Package C draws on industry experience from three water and wastewater service providers based in the MoD portfolio covering the mid and east and north of England region. Package C was led by Severn Trent plc over a 25-year concession. While at Lloyds Bank, James managed the Bank's lending to the Severn Trent-sponsored Aquatrine Package C, covering the Eastern and North regions of the England. Package C, the largest of the three constituent Packages, had a capital value of GBP 185 million.

(ii) Balfour Beatty, Kelda and Tyco ACS (Aberdeen Environmental Services Ltd) were awarded this P3 project in May 2000 for the Aberdeen wastewater project in Aberdeenshire, Scotland. The project involved detailed design and construction of three new wastewater treatment works and a major refurbishment of one existing works on a fast-track basis. This project had a construction value of GBP 100 million and the construction was completed and fully commissioned during 2001. The project utilized innovative technology (at the time) by using a thermal hydrolysis process as pre-treatment to anaerobic digestion as compared with conventional digestion means improved biogas to increase heat and power production, improved dewaterability of the digested sludge and assured pathogen reduction. James Littlefair was responsible for the on-going portfolio management of this lending exposure which included monitoring and compliance with financial and technical covenants.

RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

P3 payment mechanism, financial structuring.

CLIENT REFERENCE

Name: Victoria Whitehead
Title: Managing Director
Phone: +44 (0) 7717 844 060
Email: victoria.whitehead@lloydsbanking.com

#5 CLEAN WATER CAMPUS

Role: Financial advisor to LA Department of Sanitation and Environment ("LASAN")
Location: Los Angeles, CA
Client: LA Department of Sanitation
Status: Process Suspended
Total Project Cost: Confidential
Date of Engagement: June 2018-November 2021
Key Staff: PFAL/Tori Taylor

SCOPE DESCRIPTION

PFAL was engaged to perform feasibility and delivery alternatives analysis for the new office and laboratory facility for LASAN that is expected to be a showcase of sustainability in an economically underdeveloped area. PFAL completed our feasibility assessment in August 2018, and the outcome of that work was a recommendation to deliver the Clean Water Campus with a P3 procurement.

Subsequently, the City received an unsolicited proposal with some unique features that made it attractive to City Council. PFAL was subsequently engaged to evaluate the proposal and define the programmatic policies, procedures and guidelines in exclusive negotiations with the proposer. Since the City did not have an unsolicited proposals policy, PFAL conducted meetings and arranged workshops to define the objectives of the negotiations and derived the end goal. As a first step, PFAL developed a policy document which included design, facility management scope of works, detailed schedule and negotiations process, deal risk matrix and structure. Then, PFAL developed an innovative negotiations procedure to ensure the risk sharing in the unsolicited bid is similar to a DBFM (P3). The City is following a structured approach to the negotiations which means that the City has been able to retain the initiative in the process.

RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

Feasibility/affordability analysis, procurement strategy.

CLIENT REFERENCE

Name: Troy Ezeh, P.E.
Title: Environmental Engineer
Phone: 323-342-6251
Email: Troy.Ezeh@lacity.org

#6 LOWER COLORADO RIVER AUTHORITY – ASSET DIVESTMENT

Role: Sell-Side Financial Advisor
Location: Texas
Client: Lower Colorado River Authority
Status: Complete
Total Project Cost: Undisclosed
Date of Engagement: 2014
Key Staff: PFAL/David Gloss

SCOPE DESCRIPTION

While at a previous firm, David's team served as sole sell-side financial advisor for Lower Colorado River Authority (LCRA) in a major asset divestiture process. David supported his team in this financial advisory capacity as LCRA solicited interest from potential purchasers of its retail water and wastewater systems. The ultimate set of successful transactions included public-to-public and public-to-private transactions as well as a mix of full asset sales, lease-to-own and operating agreements. This permitted LCRA to achieve its goal of reducing its operating risk and achieving the maximum valuation for its retail utility assets while also insuring that the new owners or partners continued to use best practices in the operations of the essential systems. The complex diversity of approaches from Public-to-Public and Public-to-Private transactions combined with asset sales, leases and operating agreements offered a unique, tailored and strategic solution for LCRA.

LCRA's system covers over 20,000 square miles along a 600 mile stretch of the Lower Colorado River in Texas. It is one of the largest water districts in the U.S. Over its long history, it had acquired and developed over 30 retail water and wastewater systems (some of which were under-developed) and for which LCRA had invested significantly. LCRA made the decision that owning these retail water and wastewater entities no longer represented a core focus and thus sought financial solutions.

RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

Evaluation services, assisting Water Authority review of qualifications vetting and selection of preferred partners.

CLIENT REFERENCE

Name: Eric Zampol
Title: Managing Director
Phone: 415-706-1175
Email: ezampol@peakstone.com

#7 INTEGRATED RESOURCE RECOVERY AT COURTICE WPCP

Role: Technical advisor
Location: Courtice, ON, Canada
Client: Regional Municipality of Durham (Works)
Status: Planning
Total Project Cost: TBC
Date of Engagement: 2015-2017
Key Staff: WSP/Gary Thorne

SCOPE DESCRIPTION

The Region of Durham, Ontario, has an average day rated capacity of 68,200 m3/d. Courtice WPCP treats wastewater using a nitrified activated sludge process with an anoxic selector and ferric chloride addition for phosphorus removal. WSP was retained to produce an Integrated Resource Recovery (IRR) strategy for the Region. The IRR feasibility study included brainstorming sessions with operators and engineering staff from the Region of Durham as well as engineers and technical staff from WSO. During the brainstorming sessions 62 IRR opportunities were identified.

Each of these opportunities were then evaluated to assess their feasibility and practicality for implementation at the Courtice WPCP, resulting in 32 solutions being short-listed. Following the technical assessment, the short-listed alternatives underwent a sustainability assessment whereby the level of economic, social and environmental benefits for each solution was evaluated and then scored. Based on this assessment, the preferred alternative was determined to be process optimization to increase of biogas production (thickening or thermal hydrolysis) and biogas upgrades for injection into natural gas network use or use as transit fuel. The implementation of the preferred IRR solutions is being studied by the Region.

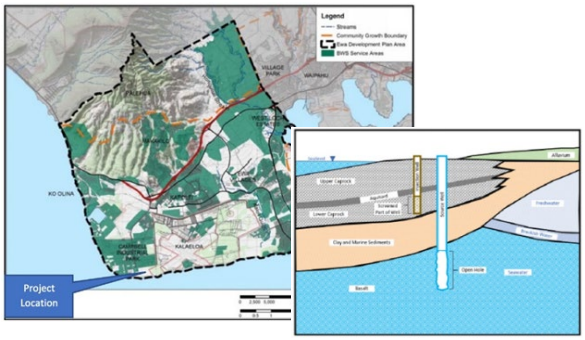
RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

This experience shows a comprehensive alternative delivery technical solutions study for a municipal wastewater treatment plant. By comprehensively studying all options, WSP enabled the Region to select the optimal resource recovery strategy to be studied in the next phase of the project. Importantly, a comprehensive study across economic, social, and environmental conditions was conducted which will have to be the same considerations made by the County of Currituck as they set out on this project.

CLIENT REFERENCE

Name: Joe Green
Title: Project Engineer
Phone: 905.668.7711, x3649
Email: joseph.green@durham.ca

#8 KALAELOA SEAWATER DESALINATION FACILITY PROJECT



Role: Procurement advisor
Location: Honolulu, HI
Client: The Honolulu Board of Water Supply
Status: In procurement
Capital Cost: $30 million
Date of Engagement: 2017 - present
Key Staff: WSP/Neil Callahan and Brian Shell

SCOPE DESCRIPTION

The Honolulu Board of Water Supply (BWS) retained WSP as the procurement and a technical advisor in their project's consultant team to develop the procurement documents (RFQ/RFP) for a team to Design-Build-Operate and Maintain (DBOM) a seawater reverse osmosis desalination facility. The Kalaeloa Seawater Desalination Facility DBOM project is for the delivery the first 1.7 MGD phase of a planned three phase 5.1 MGD SWRO plant. The DBOM contractor will be responsible for design, pilot testing, permitting, construction, start-up testing and long-term operation of the desalination facility. The Kalaeloa Seawater Desalination Facility will be the first municipal seawater reverse osmosis desalination water supply in Hawaii.

WSP developed the completive model for the procurement, prepared a preliminary project schedule and estimate of probable cost, developed the permitting requirements for the project, developed contract terms and designed and developed the RFQ/RFP. WSP developed a concept design and the Design Requirements for the treatment facility for use in the RFP and service agreement to define the project's scope. The solicitation was advertised in late 2021 and WSP is currently preparing to assist BPW in review of the Proposals.

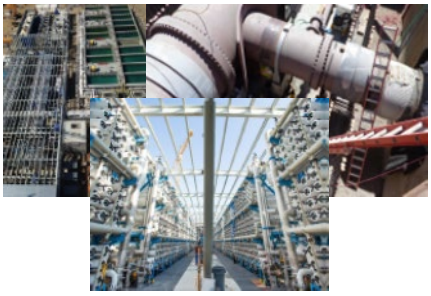
RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

This experience shows a comprehensive alternative delivery technical solutions study for a municipal wastewater treatment plant. By comprehensively studying all options, WSP enabled the BWS to select the optimal resource recovery strategy to be studied in the next phase of the project. Importantly, a comprehensive study across economic, social, and environmental conditions was conducted which will have to be the same considerations made by the County of Currituck as they set out on this project.

CLIENT REFERENCE

Name: Barry Usagawa
Title: Program Administrator
Phone: 808.748.5900
Email: busawaga@hbws.org

#9 CARLSBAD DESALINATION PLANT



Role: Technical, business and financial advisor
Location: San Diego, CA
Client: San Diego County Water Authority
Status: Operations
Capital Cost: $1 billion
Date of Engagement: 2010 - present
Key Staff: WSP/ Neil Callahan and Brian Shell

SCOPE DESCRIPTION

WSP performed technical, business, and financial feasibility evaluations for a 50 MGD reverse osmosis seawater desalination project. We provided a due diligence review and project support for SDCWA's consideration of the Carlsbad Desalination Project in Carlsbad, California. The project was proposed by a developer as a Design-Build-Own-Operate-Transfer project to be constructed via a Water Purchase Agreement that outlined the terms under which a private firm would produce and sell water to SDCWA on a commodity purchase basis. WSP's project responsibilities included assistance with the development of the project's design criteria and technical specifications, and reviewed various proposed design and site layouts, evaluated technical feasibility and related business issues. WSP assisted SDCWA with developing the project's implementation strategy, providing negotiation support on the site lease, developing project buy-out valuation estimates, preparing an interactive financial model for assessing the impacts of various financial terms and on project economics. WSP developed a term sheet for supporting SDCWA with developer negotiations.

Additionally, we developed capital and operating cost estimates, technical specifications, and reviewed various proposed design and site layouts. Our team also reviewed the reasonableness of the developer's proposed pricing for delivering desalinated water. This included reviewing the proposed financing structure, the structure of capacity and commodity charges, escalation terms, level of developer participation, provisions for insurance and performance bonds, contract re-openers, and payment terms. Our work products also included decision support models, a valuation model, and an interactive model that can evaluate the cost desalination facility and transmission system costs, operation and maintenance costs, and future plant additions on project economics. The project was being pursued by SDCWA as part of the long-term water supply plan for their objective of supply diversification. WSP remains a critical advisor to the County for the project.

RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

WSP has provided comprehensive services to San Diego County throughout the lifecycle of the Carlsbad Desal project. From the early days of planning to operational observations and awareness of the recent sale of the project, WSP has been alongside SDCWA. WSP was instrumental in contributing to the development of the payment mechanism, term sheets, and various modeling activities that have ensured the successful operations of this impressive facility. This project demonstrates the complete range of services in P3 transactions in the water market that WSP is able to provide as part of the team for the County of Currituck.

CLIENT REFERENCE

Name: Robert Yamada
Title: Water Resources Manager
Phone: 619.200.3730
Email: ryamada@sdcwa.org

#10 LAKE OSWEGO, NEW WASTEWATER TREATMENT FACILITY P3

Role: Special legal counsel
Location: Lake Oswego, OR
Client: City of Lake Oswego
Status: In Procurement
Capital Cost: $130 million
Date of Engagement: May 2019 - present
Key Staff: Hawkins/Rick Sapir

SCOPE DESCRIPTION

City of Lake Oswego, Oregon – New Wastewater Treatment Facility Progressive P3 Project, structured as a Progressive Design-Build-Finance-Operate-Maintain. Hawkins currently represents the City of Lake Oswego, Oregon, as special counsel, in its procurement and development of a new wastewater treatment facility to replace the current wastewater treatment facility that is owned and operated by the City of Portland, Oregon. Under the staged "progressive" DBFOM or P3 approach, Hawkins was the primary drafter of the request for proposals and preliminary services agreement pursuant to which the project company will develop a 60% design and definitive pricing for the design, construction, financing, operation and maintenance of a new wastewater treatment facility for a 30 year term. The project company is also financing the cost of the preliminary services. The project is subject to an affordability ceiling which was calculated based on the cost the City of Lake Oswego and the City of Portland would incur if they decided to instead repair and upgrade the current existing wastewater treatment facility. If the project company fails to establish definitive pricing at or below the affordability ceiling when it finalizes its 60% design, then the City may terminate the preliminary services agreement and pay for the services performed to date at a discounted rate. Hawkins has also been contracted by the City to draft the definitive project agreement which the parties expect to enter into after the 60% design and definitive pricing are finalized. Private Contractor: EPCOR Foothills Water Project Inc.

RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

The Lake Oswego project described above is one of the first wastewater treatment P3 projects in the country and the first to use a "progressive" or "collaborative" process. While the Lake Oswego facility is larger than the Currituck project, the project agreement structure ("DBFOM") and the requirements including performance guarantees associated with treatment capacity, effluent quality, permit compliance, residual quality and odor are identical to those that will be included in the County's project agreement. As with Lake Oswego, Hawkins can assist the County with the preparation of all procurement documents and all project related agreements.

CLIENT REFERENCES

Name: Anthony Hooper
Title: Deputy City Manager, City of Lake Oswego
Phone: (503) 697-7422
Email: ahooper@lakeoswego.city
Name: Evan Boone
Title: Deputy City Attorney, City of Lake Oswego
Phone: (503) 635-0225
Email: eboone@ci.oswego.or.us

#11 WASHINGTON BOROUGH, WASTEWATER TREATMENT PLANT

Role: Lead legal counsel
Location: Washington Borough, NJ
Client: Washington Borough
Status: Operations
Capital Cost: $20 million
Date of Engagement: 1996-97 (Original DBO Contract); 2018-19 (Replacement Operator)
Key Staff: Hawkins/Rick Sapir

SCOPE DESCRIPTION

Hawkins served as lead counsel on the first design-build-operate-maintain wastewater project to be implemented in New Jersey. In a unique procurement, DBOM proposals were received simultaneously with bids for the construction of the facility on a conventional design-bid-build basis. The lowest construction bid (which was based upon a completed design, elements of which served as the minimum design requirements in the RFP) was added to the projected cost of public operation and compared to the most advantageous proposal received in response to the design-build-operate-maintain RFP. The Borough selected the best DBOM proposal over the lowest conventional construction bid, and the project was completed in compliance with stringent consent order milestones. With the assistance of Hawkins as bond counsel, the project was financed through the State Revolving Fund. Private Contractor: U.S. Filter (Veolia).

RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

The Washington Borough project descried above was a wastewater treatment facility similar in size to the County's project that was procured on a fixed price (as opposed to progressive) basis. While the Washington Borough project was financed by the Borough using SRF funds, the DBOM structure and performance guarantees are identical to those that will be included in the County's project agreement. As with Washington Borough, Hawkins can assist the County with the preparation of the procurement documents and all project related agreements.

CLIENT REFERENCE

Name: Matthew Hall
Title: Borough Manager
Phone: (908) 689-3600 x120
Email: manager@washingtonboro-nj.org

#12 LONG HILL TOWNSHIP, SALE OF WASTEWATER TREATMENT SYSTEM

Role: Special counsel
Location: Long Hill Township, NJ
Client: Township of Long Hill
Status: Closed
Purchase Price: $12.7 million
Date of Engagement: 2017-2020
Key Staff: Hawkins/Rick Sapir

SCOPE DESCRIPTION

Hawkins served as special counsel to Long Hill Township in connection with the sale of the Township's sewer system including its wastewater treatment plant to New Jersey American Water. Hawkins prepared the procurement documents and drafted and negotiated the agreement of sale. The agreement to purchase the sewer system was approved by voters in Long Hill Township by a two-to-one margin in a referendum held in November 2019. As part of the acquisition agreement, New Jersey American Water committed to invest more than $13 million in critical sewer system improvements in the first five years after the sale. The $12.7 million proceeds from the sale will eliminate the Township's debt, freeing up over $1 million in its annual budget.

RELEVANCE TO CURRITUCK COUNTY/PROJECT SCOPE OF WORK

Similar to the County, the Long Hill Township wastewater facility was consistently malfunctioning and the Township was unable to maintain a licensed operator. Hawkins assisted the Township with a business case analysis to determine the best path forward. Ultimately, the Township determined that it was in the best interest of the Township to sell the System. Hawkins can expertly assist the County's consultant team in analyzing whether to continue to own the facility and improve it through a P3 or a different alternative delivery method and then assist the County with the implementation of the procurement including preparing any project agreements or asset sales contracts.

CLIENT REFERENCE

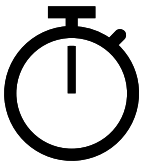
Name: Nancy Malool
Title: Township Administrator
Phone: (908) 647-8000 ext. 224
Email: administrator@longhillnj.us

3. PROJECT APPROACH

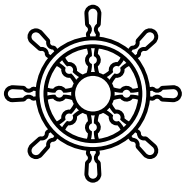
A. PROJECT BACKGROUND

We understand that the Moyock Regional Treatment Plant ("the Plant") is seeking to address environmental sanction from 2017. While the County has taken a number of steps to address the associated issues, only a temporary solution has been deployed to date and this stop-gap solution does not provide the capacity that the County estimates is needed to address future growth.

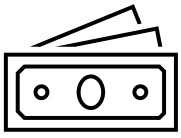
The County wishes to consider innovative approaches to the procurement, such as Public-Private Partnerships ("P3s"), to unlock the optimal and acceptable solution and reduce risk. Other factors which understood to be critical in informing the procurement approach include:



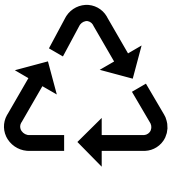
Time is of the essence – the temporary solution cannot last indefinitely, and the Plant continues to be out of compliance with state permits. An expeditious schedule appears to be important and the PFAL team has incorporated this into the thinking on schedule and have highlighted procurement options which offer a streamlined process;



Ownership and control – from a review of other publicly available information (board minutes), PFAL understands that there are concerns about the ownership and control of the plant, especially in light of experience in neighboring areas. With this mind, PFAL has highlighted a number of procurement options that can address these concerns directly.



Cost and financial impact – concerns have been raised in relation to the quantum of capital expenditures relative to the small base of rate payers (PFAL understand that there are currently 327 residential users and 38 business customers). Understanding affordability as part of the broader question on feasibility will be a critical part of the scope and the team will consider what procurement options deliver best value and what financial and funding resources can be most efficiently recruited to minimize the cost impact.



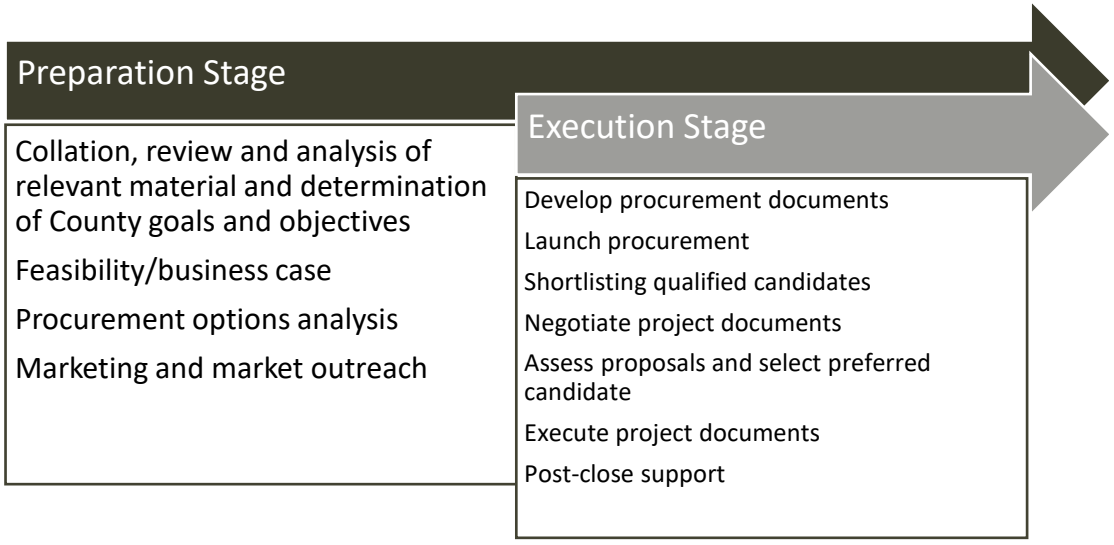
Build on work undertaken so far – the County and its personnel are a useful repository of information concerning the history of the Plant including the design plans and costs estimates produced by Hazen & Sawyer PC. PFAL intends to make efficient use of this information, recycling where necessary, possible and useful to do so, throughout its engagement with the County.

Different procurement options will emphasize certain priorities over others so it will be important to thoroughly understand the County's goals and objectives.

B. APPROACH – OVERVIEW

PFAL believes that the best procurement strategy begins with thorough preparation. Procurement decisions made on a foundation of solid analysis are more robust to controversy and criticism, and, ultimately, give stakeholders confidence that outcomes will be optimal when other options have been considered and evaluated. As such, the approach PFAL recommends has two distinct stages: **(i) the Preparation Stage;** and **(ii) the Execution Stage**, and, in short, the Preparation Stage provides the platform from which the Execution Stage can be the most successful.

Figure 2 - Approach Schematic (Two Stage Process)



The Preparation Stage will bring together and develop all the relevant information that, in turn, will be analyzed with a view to recommending an optimal procurement strategy in the context of the County's goals and objectives and within critical constraints, like affordability and technical feasibility.

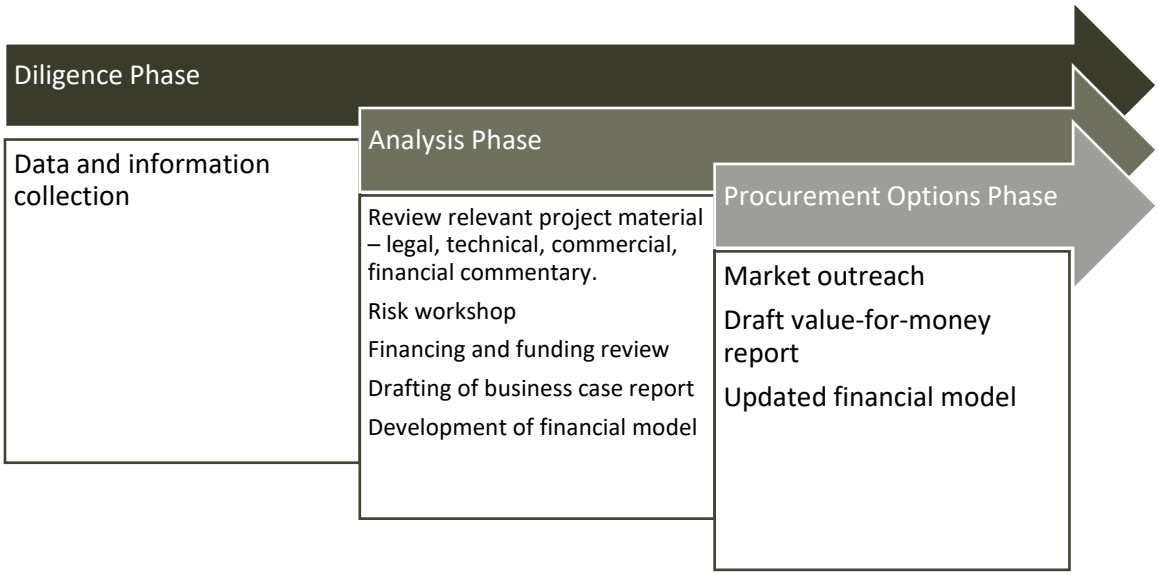
The Execution Stage will realize the recommended procurement strategy and shape the way in which the County, supported by the team, will engage with the market. It will culminate in a commercial and financial close. Throughout both stages, the management of decision makers and stakeholders more broadly is critical. The PFAL team will work closely with County staff to ensure that the procurement remains on track and has the support necessary to ensure the procurement concludes successfully.

Depending on the procurement strategy adopted, beginning-to-end, the PFAL team **estimates that the procurement can be executed in 34 to 66 weeks**. Assuming that notice to proceed is issued April 20, 2022, this would see the process conclude between December 7 2022 and July 26 2023. An overview of the process is provided in the graphic directly below. Summary schedules for each stage of the procurement are provided in the following sections and a detailed, comprehensive schedule is provided in Appendix I.

C. APPROACH – PREPARATION STAGE

The Preparation Stage itself involves three phases: (a) the Diligence Phase; (b) the Analysis Phase; and (c) the Procurement Options Phase. Broadly, the goal of this stage is to gather information, past reports and data and, where appropriate, interview knowledgeable personnel in order to understand the County's objectives along with the technical, financial, commercial, and legal issues impacting the Project. Analysis of this information, followed by the recommendation of certain procurement strategies round out the purpose of this stage.

Figure 3- Phases of the Preparation Stage



To facilitate the decision-making process, the team will produce clear and concise reports and presentational materials and will be available to support County staff with internal meetings and with public-outreach as necessary. The team has significant experience preparing for and conducting public information meetings, meetings with elected officials, industry days and confidential one-on-one interactions with prospective bidders. We can prepare materials for these meetings, orchestrate and lead, or support, as preferred by the County. The team understands the unique concerns of the public, rate payers, elected officials, and proponents and is able to craft key messages that address all of their potential concerns.

The following table summarizes the tasks, deliverables, timing requirements of each phase within the Preparation Stage, and how these overlap with the scope of services as detailed in the RFP. Beginning to end, PFAL estimates that the Preparation Stage will take 14 weeks. While many of the tasks outlined below are performed sequentially, some can be performed in parallel. Please refer to Appendix I for an integrated schedule.

Table 1- Task Breakdown of Phases in the Preparation Stage

Phase	Scope per RFP	Deliverables	Tasks	Estimated Timing Requirements
Diligence Phase	▪ [Not articulated]	▪ Establish Project dataroom	▪ Collation of relevant project material. ▪ Interview County staff.	2 weeks
Analysis Phase	▪ Assist in project scoping and feasibility ▪ Conduct financial and cash flow analysis ▪ Perform valuation of system ▪ Develop risk assessment to inform risk allocation and financial analysis ▪ Identify impacts to organization	▪ Risks and issues register; ▪ Business case report (detailing technical, commercial, financial and legal feasibility and affordability); and ▪ Financial model	▪ Review relevant project material – legal, technical, commercial, financial commentary. ▪ Risk workshop ▪ Financing and funding review ▪ Drafting of business case report ▪ Development of financial model	8 weeks
Procurement Options Phase	▪ Conduct a value-for-money analysis ▪ Provide recommendations for contract structuring and financing ▪ Evaluation market readiness	▪ Market outreach report ▪ Value-for-money report ▪ Financial model	▪ Market outreach ▪ Draft value-for-money report ▪ Update of financial model	4 weeks

The important deliverables during this stage are:

Business Case Report

The key output of analyzing the gathered information is expected to be the business case report. The business case report will distill the key issues and, importantly, determine the feasibility of the Project, especially as this relates to affordability. It will comprehensively address the legal, technical, commercial and financial issues impacting the Project. PFAL anticipates that County staff would need to agree and endorse the conclusions of the business case report and, at a minimum, it will be important for the County's decision makers to be aware of the report and its conclusions.

Risk and Issues Register

The team will lead a detailed and "living" risk assessment process. The team will conduct risk workshops at critical junctures to identify, budget for and mitigate all risks will utilize a Risk Register to identify risks, determine ownership of the risk, assess likelihood of occurrence and cost/schedule impact should the risk occur, and to identify prevention and mitigation measures for each risk. This analysis of the

key project risks will also inform the thinking around risk allocation and how this can be reflected in the Project documentation.

Financing and Funding Review

As part of the Analysis Phase and feeding into the affordability analysis, the team will conduct a finance and funding review. This will look at the rates and rate structure as these relate to the Plant as well as other sources of funding, especially in the context of federal resources under the Bipartisan Infrastructure Act, and financing, like WIFIA loans and private activity bonds ("PABs"), that could be deployed for the benefit of the Project. To tap federal sources of funding and financing certain federal assurances are typically required with federal environmental approvals under NEPA among the most time-consuming. Usefully, it appears that the Project has received a FONSI. Appendix II provides a preliminary summary of potential state and federal sources of funding and finance.

Financial Model

The affordability analysis, as well as any analysis on the most efficient procurement methodologies (the value-for-money analysis), will converge in a financial model. This is a useful analytical tool that can greatly aid the decision-making process and will be built by PFAL on a project-specific basis.

Market Outreach Report

The market outreach effort will be a balance between assessing the current market environment, soliciting feedback, and marketing the project. Public-sector entities engaging with P3 for the first time and innovative first-of-its-kind projects typically require more emphasis on the assessment of the market environment and soliciting feedback. Whereas more established types of transactions/asset classes with experienced procurement departments require greater emphasis on marketing and building project awareness in the outreach process. Too much focus on soliciting feedback can make bidders less confident about the Project parameters. As part of the Analysis Phase, this report will summarize the appetite of potential developers to participate in a competitive process to deliver the plant. This report will be an important determinant of what procurement strategies are likely to be compelling from a market perspective. Having worked for infrastructure developers in a large number of projects, PFAL is ideally placed to understand these market appetites. Key questions for exploration may revolve around the size of the plant and the relatively modest capital investment required.

With these in hand, the team will then turn to review and recommend the procurement options that are anticipated to yield the optimal outcomes for the County (the Value-for-Money study). This is determined by making certain risk adjustments to the Project's expected costs over the useful life of the Project. Keeping in view that certain parties are better positioned to manage certain risks as relate to the Project delivery, the adjustments will reflect the impact of risks being transferred or retained by parties involved in the Project. To the extent they are confirmed during the Analysis Phase, the conclusions of the Value-for-Money study will also reflect issues that may be of high importance to the County such as: the timeliness of the procurement execution, recognition of ownership and control concerns, cost and financial impacts etc.

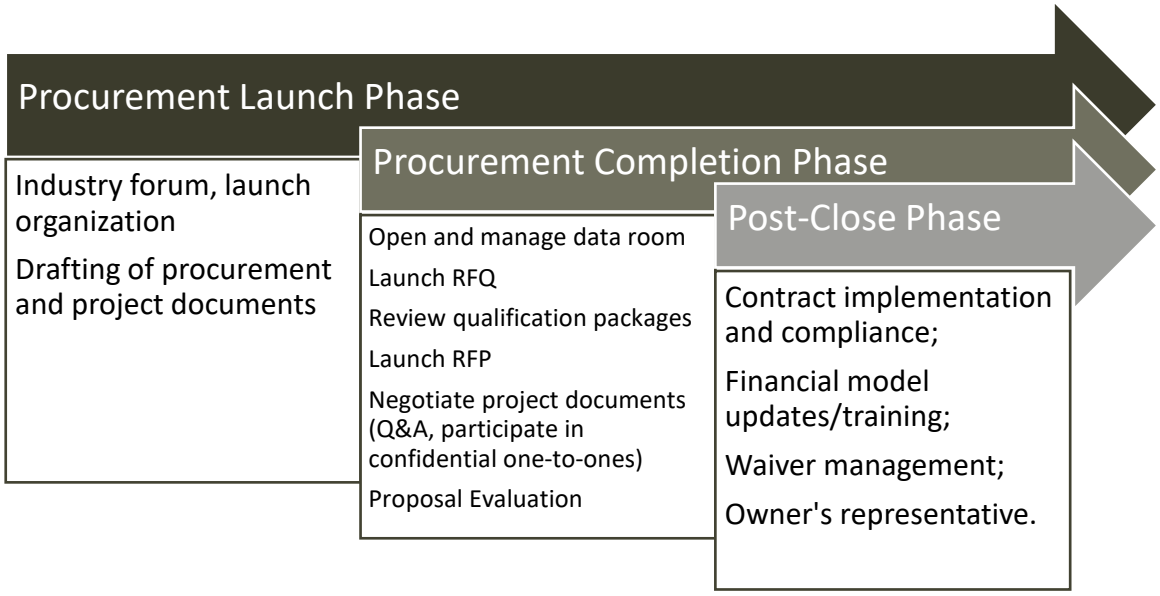
The end of the Procurement Options Phase culminates in a key decision point, wherein the County would be expected to agree to move the procurement forward to its Execution Stage and, to this end, endorse the

procurement strategy that will be deployed. As such, the Preparation Stage will be critical for consensus building among Currituck's decision makers and staff.

D. APPROACH – EXECUTION STAGE

The Execution Stage itself comprises three phases: (i) the Procurement Launch Phase; (ii) the Procurement Completion Phase; (iii) Post-Close Phase. In the first of these phases, the procurement documents are prepared and interest from the market is solicited. In the second phase, the terms of the Project are negotiated with bidders, a preferred bidder is selected, outstanding issues are finalized and the transaction documents are subsequently executed. The third, optional, phase covers any post-close support that the County requires from the team's multi-disciplinary personnel.

Figure 4 - Phases of the Execution Stage



The successful management of the Execution Stage requires consideration of the following factors:

Market Outreach To stimulate interest, further market outreach may also be necessary. This can take the form of print media, an industry-day or using infrastructure conferences/speaking opportunities to publicize the Project.

Two-Step Competition Competitive tension among well-qualified bidders is key. Best practice suggests and the team generally recommends a two-phase approach, but we will also consider and recommend if it may be more appropriate to undertake a single stage approach where a partner is selected off submitted qualifications and the Project is scoped and agreed as part of an exclusive negotiation that contains appropriate exit ramps. In a two-phase procurement, first step is a request-for-qualifications ("RFQ") stage, inviting developers to submit statements of qualification to the County. These are then assessed and approximately three of the most qualified bidders would be invited to participate in the request-for-proposals ("RFP") stage. The project

documentation, articulating the allocation of risk between parties, should be well developed in advance of the RFP stage and the shortlisted bidders are asked to make proposals against a common set of terms with few, if no, exceptions permitted. In this way the procurement is largely a competition on the technical solution and the financial impact (cost). Once the preferred bidder is selected, the documents are finalized and financial close is reached. In this preferred-bidder stage, the pricing commitments of the private-sector partner should be supported by bid security to ensure discipline around the proposed terms and limited slippage on the priced elements of the project.

In this process, the County must make key decisions to move forward at the following junctures:

- To confirm the shortlisted bidders prior to launching the RFP;
- To confirm the general provisions included in the RFP and project documentation (Project Agreement ("PA"), Sale and Purchase Agreement ("SPA"), or the Design and Build Agreement ("DBA")) prior to launch the RFP;
- To confirm the evaluation of bids and the selection of preferred bidder;
- To confirm the final terms of the project documents.

Procurement Commitments

Most P3s are procured on a "hard bid" basis, in which the RFP phase of the procurement concludes with committed pricing and, where the bidders are financing the project, committed financing. This approach ensures limited risk to the revision of terms and pricing once a preferred bidder has been selected and gives the government an objective "apples-to-apples" comparison of proposals. However, some developers and public-sector owners prefer a "progressive" approach to procurement which does not require these pricing or financing commitments. In a progressive approach these elements are required later, after the selection of a preferred bidder in the RFP phase. This approach can be useful for particularly complex projects with unusual or complicated designs which are difficult to price or where competition may be limited. However, a progressive approach removes competitive tension from the latter phases and so additional features are necessary like the agreement of off-ramps, and, oftentimes, more sizable stipends should these off-ramps be exercised.

While the principles would be adopted in most procurement strategies, there may be certain differences in the schedule and the types of documents negotiated depending on the recommendations agreed in the value-for-money study. The team anticipates that one of three procurement strategies are likely to comprise the most desirable approaches from the County's perspective:

Option (A) – P3

A Public-Private Partnership – in this option, the County will contract with a private-sector developer under a time-limited concession. Under the concession, ownership of the plant will continue to reside in the hands of the County, but certain risks will be parsed to the private-sector partner (namely, the design, construction, financing, operating and maintenance risks). Once the construction of the new plant has been successfully completed, fixed availability payments are made by the County to the private-sector partner. These payments, which may be adjusted for inflationary

factors and for significant changes to the volume of throughput, are performance-based and through a deductions regime incentivize the private-sector partner to deliver a plant that factors into the design and construction equation operational and lifecycle costs over the long-term. These availability payments provide the County with a high degree of cost certainty over time. The Execution Stage of Option (A) is estimated to last 52 weeks from beginning to end.

Option (B) – Expedited Sale

Expedited Asset Sale – under this option, the County would sell the asset contingent on the completion by the purchaser of certain design and construction requirements pertaining to the replacement plant. The purchaser would be responsible for financing the construction costs (and any other purchase costs). As well as defining the technical requirements of the new plant, the sale and purchase agreement ("SPA") would also need to agree the parameters in which rates could be modified over time. Relative to Option (A), the principal benefit of this approach is speed, with a more compressed Procurement Execution Stage. Depending on the cost of construction and the net present value of the plant's excess revenues (after financing, operating and maintenance costs) Option (B) could also be potentially executed under a lease or other time-limited arrangement so that the County's loss of ownership would not be permanent. The Execution Stage of Option (B) is estimated to last 28 weeks from beginning to end.

Option (C) – DB(F)

Design-Build with County Financing – in this option proposals are invited from qualified bidders for the design and construction of the new plant. The Design-Build contract would be executed on a date-certain completion, fixed-price basis to ensure that the County/rate payers are shielded from construction cost risks. With appropriate disclaimers, the design of Hazel & Sawyer PC could be made available to bidders as an indicative design or bidders could compose an entirely new design but, in both scenarios, bidders would be incentivized by the bid process to provide a superior solution to the current design. In this option, the County would be responsible for the financing arrangements and, as a registered municipal financial advisor, PFAL can assist the County on executing these arrangements. In this approach, the County is assumed to retain the services of the incumbent operator or plant operations could be included with the DB scope of services or bid as a separate procurement. Option (C) represents the shortest schedule. The Execution Stage of Option (C) is estimated to last 24 weeks.

The following table summarizes the tasks, deliverables, timing requirements of each phase within the Execution Stage according to the procurement options (A), (B), or (C), and how these overlap with the scope of services as detailed in the RFP. Beginning to end, PFAL estimates that the Execution Stage will take 52, 28, or 20 weeks for Options (A), (B) and (C) respectively. While many of the tasks outlined below are performed sequentially, some can be performed in parallel. Please refer to Appendix I for an integrated schedule.

Table 2 - Task Breakdown of Phases in the Execution Stage

Phase	Scope per RFP	Deliverables	Tasks	Estimated Timing Requirements
Procurement Launch Phase	▪ Provide recommendations for contract structuring and financing ▪ Draft development contract including risk allocation, structuring of supervening events, structure of termination clauses, and payment mechanisms ▪ Assist in development of Request for Qualifications and review of Statement of Qualifications.	Option (A) ▪ Market outreach ▪ Draft RFQ, Draft RFP, Draft Project Documents	Option (A) ▪ Industry forum, launch date organization ▪ Drafting of procurement and project documents	8 weeks
		Option (B) ▪ Market outreach ▪ Draft RFQ, Draft RFP, Draft SPA	Option (B) ▪ Industry forum, launch date organization ▪ Drafting of procurement and project documents	6 weeks
		Option (C) ▪ Market outreach ▪ Draft DB RFQ, Draft DB RFP, Draft DBA ▪ Draft underwriter RFP ▪ Ratings diligence	Option (C) ▪ Industry forum for DBers, launch date organization ▪ Prepare ratings diligence	6 weeks
Procurement Completion Phase	▪ Provide recommendations for contract structuring and financing ▪ Draft development contract including risk allocation, structuring of supervening events, structure of termination clauses, and payment mechanisms	Option (A) ▪ Dataroom ▪ Shortlist recommendations ▪ Bidder commentary review ▪ Proposal evaluation ▪ Final County approvals ▪ Closing timetable	Option (A) ▪ Open and manage data room ▪ Launch RFQ ▪ Review qualification packages ▪ Launch RFP ▪ Negotiate PA (Q&A, participate in confidential one-to-ones) ▪ Proposal Evaluation	44 weeks

Phase	Scope per RFP	Deliverables	Tasks	Estimated Timing Requirements
	▪ Assist in development of Request for Qualifications and review of Statement of Qualifications. ▪ Conduct financial and cash flow analysis ▪ Perform valuation of system ▪ Develop risk assessment to inform risk allocation and financial analysis ▪ Identify impacts to organization	Option (B) ▪ Dataroom ▪ Shortlist recommendations ▪ Bidder commentary review ▪ Proposal evaluation ▪ Final County approvals ▪ Closing timetable	Option (B) ▪ Open and manage data room ▪ Launch RFQ ▪ Review qualification packages ▪ Launch RFP ▪ Negotiate SPA (Q&A, participate in confidential one-to-ones) ▪ Proposal Evaluation	22 weeks
		Option (C) ▪ Dataroom ▪ Shortlist recommendations ▪ Bidder commentary review ▪ DB Proposal evaluation ▪ Underwriter evaluation ▪ Rating agency letter ▪ Final County approvals ▪ Closing timetable	Option (C) ▪ Open and manage data room ▪ Launch DB RFQ ▪ Review DB qualification packages ▪ Launch DB RFP ▪ Negotiate DBA (Q&A, participate in confidential one-to-ones) ▪ DB Proposal Evaluation ▪ Launch underwriter RFP ▪ Underwriter evaluation ▪ Launch rating agency process	14 weeks
Post-Close Phase	▪ Identify impacts to organization	▪ To be agreed	May include: ▪ Contract implementation and compliance; ▪ Financial model updates/training; ▪ Waiver management; ▪ Owner's representative.	N/A

4. FEE PROPOSAL

The team is pleased to provide its competitively priced fee schedule in Appendix III. The fees outlined therein are subject to finalization of the terms of engagement between the County and PFAL.

5. CONCLUSION

The team constituents, PFAL, WSP, and Hawkins, afford the County excellent qualifications across the three essential disciplines of procurement advice: financial/commercial, technical and legal. The team can draw on the broadest and deepest cross section of highly relevant experience to help the County determine the most appropriate procurement strategy; one that will deliver best value and is manageable within the County's requirements.

On behalf of the wider team, PFAL thanks the County for the opportunity to work on the Moyock Regional Wastewater Treatment Plant. The team looks forward to engaging with the County and facilitating a successful procurement.

We look forward to answering any questions you have about our proposal.

James Littlefair
james.littlefair@pfalimited.com
(917) 251-6199

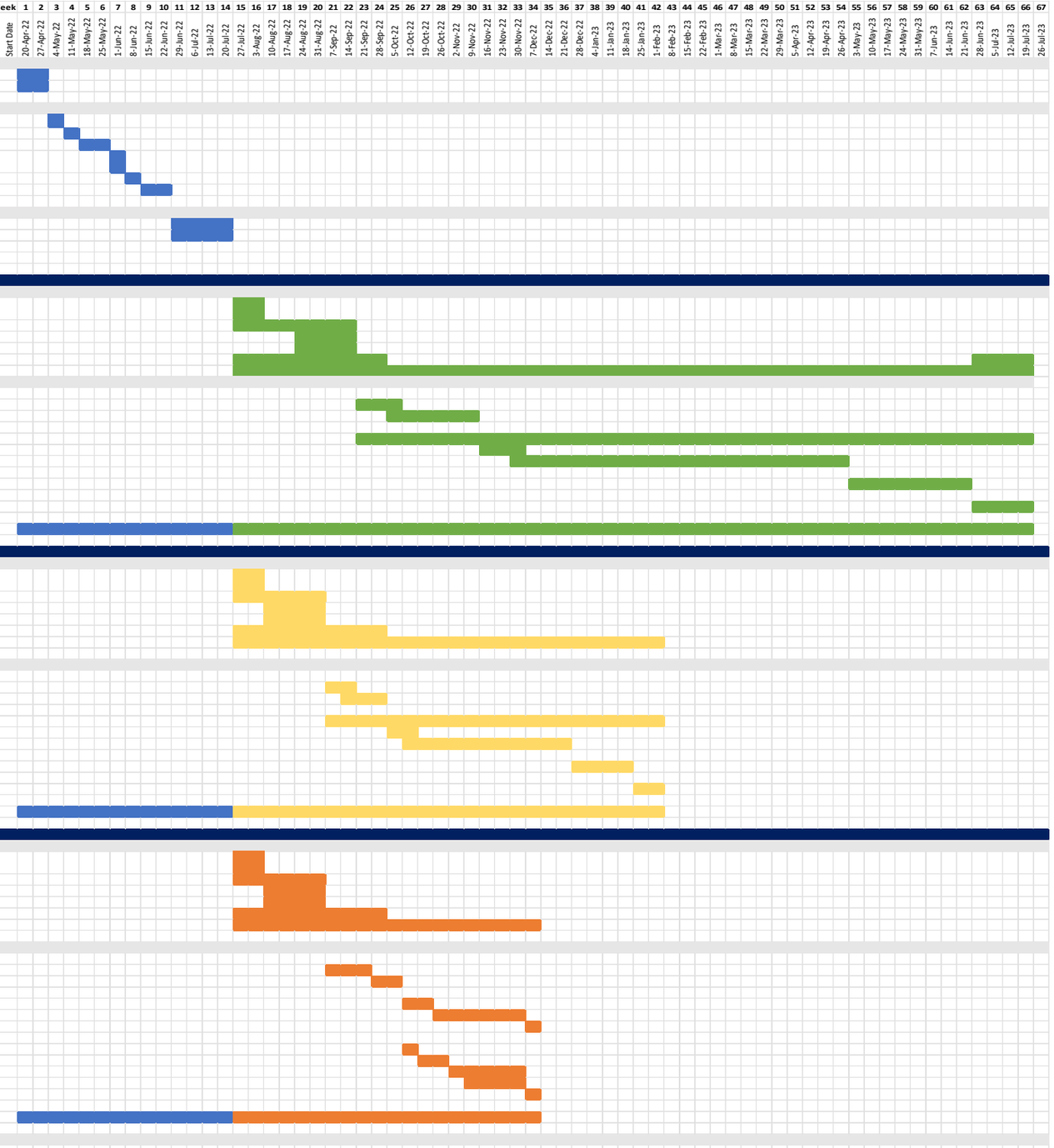
APPENDIX I

Proposed Project Schedule

PFAL Project Finance Advisory Ltd.

PROJECT TIMELINE

SCOPE	DELIVERABLES	TASKS	Time (weeks)
Diligence Phase			**2**
Understanding County's Objectives	Establish dataroom/information repository	Collation and review of relevant project material	1
Understanding of project history and issues		Interviews with County and System staff	1
Analysis Phase			**8**
Assist project scoping and feasibility	Business case report (feasibility, affordability)	Risk Assessment – documentation review and risk workshop	1
Conduct financial and cash flow analyses	Financial model with supporting slides	Develop project requirements	1
Risk assessment	Risks and issues register	Review and confirm estimated costs, revenues, system financing, fundin	2
Understand financial implications of each for County		Financial/cash flow modeling	1
Funding and finance available to County		Funding and finance review	1
Perform valuation of system		Drafting business case	2
Procurement Options Phase			**4**
Conduct value-for-money analysis	Value-for-Money Report	Value-for-Money analysis/determination of best procurement option	4
Identify impacts on organization	Approval to commence procurement	Stakeholder buy-in	4
Evaluate market readiness	Marketing outreach		
OPTION A: P3			
Procurement Preparation Phase			**8**
Prepare recommendations for contract structuring and financing		Undertake market outreach, RFI and convention circuit to gather feedback and publicize project	2
Draft development contract including risk allocation, structuring of supervening events, structure of termination clauses, and payment	Developed project documents (RFQ, [RFP], [PA])	Develop RFQ	8
		Develop RFP and PA	4
	Support with stakeholder management	Prepare dataroom for bidders	4
		Prepare grant/PABs applications	10
		Stakeholder buy-in	52
Procurement Execution Phase			**44**
	Qualifications review and commentary	**Qualifications Process**	**8**
Assist in development of Request for Qualifications and review of Statements of Qualifications	Negotiation support	*Launch RFQ*	*3*
	Support with stakeholder management	*Review qualification packages*	*6*
	Financial model	**Negotiate PA**	**24**
	Proposal review and commentary	*Manage dataroom*	*44*
Assist with contract negotiations	Transaction finalization and support for commercial/financial close	*Launch RFP and PA*	*3*
		Negotiate with bidders	*22*
		Assess Proposals	**8**
		Review and evaluate proposals/facilitate selection	*8*
		Execution	**4**
		Transaction execution (commercial and financial close)	*4*
		Total time required for Option A from Start to Finish	***66***
OPTION B: Expedited Sale			
Procurement Preparation Phase			**6**
Prepare recommendations for contract structuring and financing	Marketing outreach	Undertake market outreach, RFI and convention circuit to gather feedback and publicize project	2
Draft development contract including risk allocation, structuring of supervening events, structure of termination clauses, and payment	Developed project documents (RFQ, [RFP], [SPA])	Develop RFQ	6
		Develop RFP and SPA	4
	Support with stakeholder management	Prepare dataroom for bidders	4
		Prepare grant/PABs applications	10
		Stakeholder buy-in	28
Procurement Execution Phase			**22**
	Qualifications review	**Qualifications Process**	**4**
Assist in development of Request for Qualifications and review of Statements of Qualifications	Negotiation support	*Launch RFQ*	*2*
	Support with stakeholder management	*Review qualification packages*	*3*
	Financial model	**Negotiatiate SPA**	**12**
	Proposal review and commentary	*Manage dataroom*	*22*
Assist with contract negotiations	Transaction finalization and support for commercial/financial close	*Launch SPA*	*2*
		Negotiate with bidders	*11*
		Assess Proposals	**4**
		Review and evaluate proposals/facilitate selection	*4*
		Execution	**2**
		Transaction execution (commercial and financial close)	*2*
		Total time required for Option B from Start to Finish	***42***
OPTION C: DB (F)			
Procurement Launch Phase			**6**
Prepare recommendations for contract structuring and financing	Develop project documents (construction contractor RFQ, RFP, Construction Contract)	Undertake market outreach, RFI and convention circuit to gather feedback and publicize project	2
Draft development contract including risk allocation, structuring of supervening events, structure of termination clauses, and payment	Marketing outreach	Develop RFQ	6
	Rating strategy recommendation	Begin development of RFP and DB Agreement	4
	Underwriter RFP	Prepare dataroom for bidders	4
	Stakeholder support	Undertake grant applications	10
		Stakeholder buy-in	28
Procurement Completion Phase			**14**
Assist in development of Request for Qualifications and review of Statements of Qualifications	Qualifications review – construction contractors, underwriters	**Design Builder Qualifications Process**	**5**
		Launch construction RFQ	*3*
Assist with contract negotiations	Rating letters	*Review qualification packages*	*2*
	Negotiation support	**Negotiate Design/Build and Operate Agreeement**	**9**
	Support for commercial and financial close	*Launch DB RFP*	*2*
		Negotiate with qualified DBers	*6*
		Commercial close (execute construction contract)	*1*
		Financing Process	**9**
		Prepare RFP for underwriters	*1*
		Launch RFP for underwriters/ review responses and recommend	*2*
		Prepare ratings diligence	*5*
		Complete ratings process	*4*
		Financial close	*1*
		Total time required for Option C from Start to Finish	***34***
Post-Procurement Support Phase			
Out of Scope		Post-closing support	



APPENDIX II

Potential Sources of Finance and Funding

PFAL

Potential Sources of Public Funding and Financing

Financing or Grant	Program	Eligibility	Application
Source of Financing	**WIFIA Loan Program** (Link) (Detailed Guidelines Link) Administered by EPA, accelerates investment in water and wastewater infrastructure of national and regional significance by offering loans to creditworthy borrowers for up to 49% of eligible project costs. **Dec 2021:** Lake Oswego Wastewater Treatment Facility P3 (Oregon) selected by EPA for $76mm WIFIA loan (Press link) • First-ever WIFIA LOI submitted by a private entity rather than by a procuring entity • The preferred proponent (EPCOR Foothills) will be the borrower • **Next Steps in Phase 2:** financial & engineering review, loan negotiation, financial close **Past WIFIA Applicants from North Carolina** (link) (more detailed project info) • Mallard Creek Sewer Basin Wastewater Collection and Treatment Improvements Program (2021) by Charlotte Water • Wastewater Treatment Improvements Program (2020) by Johnston County • GUC Water Treatment Plant Phase 1 Upgrades (2019) by Greenville Utilities Commission • Northwest Water Treatment Plant 36 MGD Improvements Project (2018) by Brunswick County	Selection Basis • Project impact • Creditworthiness • Protection against climate change • Use of new/innovative approaches • Environmental sustainability • Replacement of aging infra systems Eligible Projects • Wastewater projects • Drinking water projects • Projects that enhance energy efficiency in operation of public water system • Projects for repair/replacement of treatment, community system, distribution, or waste collection facility • Desalination project • Drought mitigation project • Acquisition of real property integral to an eligible project above	**Phase 1: Project Selection** • EPA announces amount of funding it'll have available and solicits letters of interest (LOI) demonstrating project eligibility, creditworthiness, engineering feasibility, readiness to proceed, and alignment with EPA's policy priorities. • Selects projects which it intends to fund, invites borrowers to continue application **Phase 2: Review, Negotiation, and Closing** • EPA conducts a detailed financial and engineering review of the project • Proposes terms and conditions for the project and negotiates to reach a term sheet and loan agreement with the applicant **Deadline/Availability** • FY 2021 LOI was due **July 23** • LOI submitted electronically (Link to NOFA) • Date of FY 2022 funding availability TBD (mailing list notification link)
Source of Financing	**Clean Water State Revolving Fund (CWSRF)** (Link)	Eligible Projects • Wastewater treatment	Common application for all North Carolina Department of Environmental Quality (DEQ) water project infrastructure programs

PFAL

Potential Sources of Public Funding and Financing

Financing or Grant	Program	Eligibility	Application
	Administered by North Carolina Department of Environmental Quality (DEQ) Division of Water Infrastructure. Funded and capitalized by Congress for 20 years, provides to establish revolving loan programs for funding of wastewater treatment facilities and projects associated with estuary and nonpoint source programs. Available to local government units, up to $30 million Types of Funding Available • Low-interest loans (1/2 of market interest rates) • Principal forgiveness loans (limited amount) • 0% interest loans (for Green Projects and for rehabilitation projects for certain local government units)	• Wastewater collection • Reclaimed water • Stormwater BMPs • Stream restoration • Energy efficiency at treatment works or collection systems	Application Link Criteria for Wastewater Projects (Link to detailed guidance) • Project Purpose (25%) • Project Benefits (35%) • System Management (15%) • Affordability (25%) Spring 2022 project applications due **May 2, 2022** Two funding cycles per year, typically in March and September
Source of Grant and Financing	**State Wastewater Reserve Program** (Link) Administered by North Carolina Department of Environmental Quality (DEQ) Division of Water Infrastructure. Provides grants and loans for planning, design and construction of critical water infrastructure. Intended to target applicants who demonstrate the most need and can least afford the project. • Grants awarded for 3 consecutive years capped at $3 million total per system • Loans awarded for 3 consecutive years capped at $3 million total per system	Available only to local government units, to the extent that other funding sources are not reasonably available to the applicant. Intended to stretch limited grant dollars and target applicants who demonstrate the most need and can least afford the project. for (1) determining eligibility for grant funding and (2) determining the percentage of the project that would be funded by grants. Eligible Projects • Wastewater collection systems and treatment works • Public water system projects	Common application for all North Carolina Department of Environmental Quality (DEQ) water project infrastructure programs Application Link Criteria for Wastewater Projects (Link to detailed guidance) • Project Purpose (25%) • Project Benefits (35%) • System Management (15%) • Affordability (25%) Spring 2022 project applications due **May 2, 2022**

PFAL

Potential Sources of Public Funding and Financing

Financing or Grant	Program	Eligibility	Application

Source of Grant	**Economic Infrastructure Program** (Link)
	
	Administered by Rural Economic Development Division of the NC Department of Commerce, these state rural grants are provided to local governments to assist with infrastructure projects in rural areas that will lead to the creation of new, full-time jobs.
	
	Award amount will be assessed at the discretion of the Rural Infrastructure Authority, based on:
	• Project location
	• Quantity and quality of jobs committed
	• Overall economic impact of the project
	
	For reference, Development District Association of Appalachia says reward amounts are up to $10,000 per full-time job, maximum award of $500,000, if project is located in a Tier 1 or Tier 2 county.
		Eligible applicants are units of local government, with **priority given to the 80 most economically distressed counties**, per 2022 county distress tier designations (Being Tier 3, Currituck County does not fall into the 80 highest-ranked distressed counties)
		
		Eligible projects include:
		• Upgrades or repair of public drinking water or wastewater treatment plants
		• Upgrades, extensions, or repair of public water or sewer lines
		• Extensions of publicly owned natural gas line
		• Installation or extension of public broadband infrastructure
		• Construction of publicly owned access roads not funded or owned by NC DOT
		• Construction of public rail spur improvements
		
		Other requirements include:
		• Creation of new, full-time jobs
		• Local government project oversight
		• 5%+ cash match of grant amount
			Application Link
			
			Upcoming 2022 application deadlines on **February 24 and April 28** (link)
			
			Projects meeting all the criteria below may receive the highest priority consideration:
			• Located in a Tier 1 or Tier 2 county (one of 80 most economically distressed counties)
			• Meet or exceed the county average annual wage
			• Offer at least 50% employer-paid health insurance
			• Will create a significant number of new, full-time jobs
			• Identified as a Target Industry:
			  ○ Aerospace/Aviation/Defense
			  ○ Automotive/Truck/Heavy Equipment
			  ○ Agriculture/Forestry/Food
			  ○ Biotech/Life Sciences
			  ○ Business and Financial Services
			  ○ Energy
			  ○ Information Technology
			  ○ Manufacturing (Chemical / Furniture / Metals / Plastics / Textiles)
			  ○ Other Headquarters

Source of Financing	**Private Activity Bonds** (Link to Legislation) The North Carolina Federal Tax Reform Allocation Committee administers the tax-exempt private activity bond (PAB) program for North Carolina. It's comprised of the Secretary of the Department of Commerce, the Executive Assistant to the Governor for	Under IRC Section 142, water furnishing facility projects are eligible for a PAB allocation regardless of private sponsor ownership (see PDF p.5 here)	Applications are sent to the Director of the Commerce Finance Center in care of the Industrial Financing Group in the Department of Commerce at: 4318 Mail Service Center Raleigh, NC 27699 (919) 814-4613

Financing or Grant	Program	Eligibility	Application
	Budget Management, and the State Treasurer. **2022 PAB Volume Cap** for North Carolina: $1.161 billion **2017 PAB issuance volume** for water, sewage, and solid waste disposal facilities in US: $2.419 billion (1.7% of all issues)		Applications should include: • Pertinent facts as to the project being financed • Details of sale and market distribution • Details as to the economic benefit to the area impacted by the project (See PDF p.2 here)
Sources of Grants and Financing	**President Biden's American Jobs Plan** (Press Release) (Funding Breakdown) Includes $55bn in water infrastructure investment, part of which includes: • $11.7bn for the EPA's Drinking Water State Revolving Loan Fund (SRF) • $11.7bn for the EPA's **Water Infrastructure Improvements for the Nation Act (WIIN)** grants • $15bn for lead service line replacement projects and associated activities directly connected to the identification, planning, design, and replacement of lead service lines, through Drinking Water SRF • $1bn for emerging contaminants in wastewater, through the Clean Water SRF • $4bn to monitor and remediate PFAS (per- and polyfluoroalkyl substances) in drinking water, through the Drinking Water SRF • $5bn to small and disadvantaged communities for addressing emerging contaminants, through grants under the Safe Drinking Water Act. • $1bn for rural water projects (existing authorized projects)		

APPENDIX III

Fee Schedule

FEE PROPOSAL

The fully-loaded hourly rates for each constituent firm in the team are detailed below. PFAL and Hawkins have provided a simple blended rate as an alternative. These rates will apply to both the agreed scope of work and out-of-scope work. Additional expenses, such as travel and accommodation, will be reimbursed at cost and will be subject to the County's prior authorization.

PFAL Project Finance Advisory Ltd.

Labor Categories (Personnel)	Hourly Rate
Engagement Lead (James Littlefair)	$340
Procurement Strategy Lead/Deputy Project Manager/Project Oversight (Tori Taylor)	$350
Procurement Analyst (David Gloss)	$320
Financial Modeling Lead (Nikita Manyenkov)	$300
Financial Modeling Support (Andrew Shinn)	$290
Blended Rate	*$320*

WSP

Labor Categories (Personnel)	Hourly Rate
Project Manager/Technical Advisor (Brian Shell)	$190
Principal/Technical Advisor (Steve Tarallo, James Rydquist, Neil Callahan)	$350
Senior Subject Matter Expert/Technical Advisor (Thomas Payne)	$250
Subject Matter Expert/Technical Advisor (Glenn Bottomley)	$210
Project Engineer/Technical Advisor (Walter Mahoney)	$150

Hawkins DELAFIELD & WOOD LLP

Labor Categories (Personnel)	Hourly Rate
Lead Legal Advisor (Rick Sapir)	$595
Counsel (Megan Sartor)	$525
Associate (Andrew Ligon)	$495
Blended Rate	*$550*

APPENDIX IV

Team Resumes

EDUCATION

Master of Art (Modern History), University of Oxford

LICENSES + ACCREDITATIONS

Certificate in Finance, Certificate in International Treasury Management, Association of Corporate Treasurers

MSRB Series 50

Engagement Lead

JAMES LITTLEFAIR

MANAGING DIRECTOR

James Littlefair is a well-established expert with over 21 years of experience structuring and executing procurement strategies and financial solutions for capital-intensive infrastructure projects.

James has advised both public and private sector clients on major infrastructure projects and executed transactions across a wide range of asset classes including revenue risk projects, social infrastructure/accommodation-style projects with availability payments and projects in the broader arena of economic and environmental infrastructure – water, wastewater, power and power supplies, airports, and ports. In addition to his expertise in the infrastructure sector, James also has extensive experience as a lender and an advisor in the real-estate and sports stadia sectors.

EXPERIENCE RELEVANT TO CURRITUCK COUNTY

James brings a contemporary knowledge of a wide range of debt markets (banks, taxable notes, municipal tax-exempt bonds) as well expertise in relation to alternative forms of financing at the state and federal level (WIFIA, Private Activity Bonds etc).

Relevant Experience

CITY OF LOS ANGELES SANITATION DEPARTMENT CLEAN WATER CAMPUS

CALIFORNIA, CLIENT: LASAN, FINANCIAL ADVISOR

James is part of the PFAL team that was appointed to assess funding and delivery options for the new Clean Water Campus being considered in downtown Los Angeles. This work includes presenting to senior level officials, assessing different procurement/delivery strategies, and providing clear and succinct presentations and documentation of our research and findings.

CONFIDENTIAL WASTEWATER TREATMENT/WATER PURIFICATION PROJECT

CALIFORNIA, ONGOING

James is leading the team's mandate to execute financial advisory services for a bidder to a confidential California wastewater/water purification project. The work includes financial and strategic advisory on a range of financial options including accessing WIFIA, Private Activity Bonds, and the State Revolving Fund.

AQUATRINE PACKAGE C

UNITED KINGDOM, MANDATED LEAD ARRANGER

The Aquatrine projects are the Ministry of Defence's country-wide water and wastewater P3 program in the UK. The Aquatrine private-partners undertook significant upgrades to inherited water and waste water systems as well as providing water and wastewater services and manage

JAMES LITTLEFAIR
Managing Director

environmental risk across the Defence Estate allowing the MOD to focus on its core activities. This was achieved by utilizing water industry expertise to improve the MOD's performance in environmental compliance and sustainability over the contract term. Aquatrine covers circa 4,000 sites on the MOD Estate, representing approximately 85% of the Ministry of Defence Estate.

Aquatrine draws on industry experience from three water and wastewater service providers and offers sustainable solutions through an award-winning 25-year collaborative partnership. While at Lloyds Bank, James managed the Bank's lending to the Severn Trent-sponsored Aquatrine Package C, covering the Eastern and North regions of the England. Package C, the largest of the three constituent Packages, had a capital value of GBP 185 million.

AQUARION COMPANY ACQUISITION

NEW ENGLAND, USA, LENDER

In 2006, James was part of the lending team that provided debt facilities to facilitate the Macquarie-led buy-out of US water utility, the Aquarion Company (Aquarion) from Kelda Group plc of the UK, for an enterprise value of $860mm. The debt facilities totaled $555mm.

YORK WASTEWATER CONCESSION ACQUISITION

PENSYLVANIA, ADVISOR TO PREFERRED BIDDER

James led PFAL's mandate as financial advisor to a private consortium for this wastewater concession in the US. James oversaw the development of the financial model, financial structure optimization, review of the concession agreement, and bid strategy.

ABERDEEN WASTEWATER P3

ABERDEEN, UK, MANDATED LEAD ARRANGER

The Balfour Beatty, Kelda and Tyco ACS (Aberdeen Environmental Services Ltd) were awarded this PPP project in May 2000 for the Aberdeen wastewater project in Aberdeenshire, Scotland. The project involved detailed design and construction of three new wastewater treatment works and a major refurbishment of one existing works on a fast-track basis. This project had a construction value of $100 million and the construction was completed and fully commissioned during 2001.

James was responsible for the on-going portfolio management of this lending exposure which included monitoring and compliance with financial and technical covenants. For example, the project benefitted from using a thermal hydrolysis process as pre-treatment to anaerobic digestion as compared with conventional digestion means improved biogas to increase heat and power production, improved dewaterability of the digested sludge and assured pathogen reduction.

NORCAL WASTE DIVERSION PROJECTS

SACRAMENTO, SONOMA, ADVISOR TO BIDDER

James is leading the advisory mandate to the teams for the City and County of Sacramento's and the Sonoma County's organic waste diversion projects. These projects utilize some of the same anaerobic

PFAL

JAMES LITTLEFAIR

Managing Director

ADDITIONAL PROJECTS

- **Augustana University Student Accommodation Project, SD, Financial Advisor to University**
- **Kansas City International Airport Terminal A, Financial Advisor to Developer**
- **Gilcrease Expressway, OK, Financial to Build America Bureau**
- **C-470, CO, Financial Advisor to TIFIA Lender**
- **Transform66, Virginia, Financial Advisor to USDOT**
- **Massachusetts Bay Transportation Authority (MBTA) – Mass Transit Ticketing P3 – Financial Advisor to winning consortium.**
- **Amtrak RRIF Loan, Northeast US, Financial Advisor to USDOT**
- **Birmingham Grouped Schools P3, UK, Lender**
- **East Lothian Grouped Schools P3, UK, Lender**
- **Portsmouth Highways P3, UK, Lender**
- **A30-A35 Exeter-Bere Regis Shadow Toll Road P3, UK, Lender**
- **Roadlink (A69), Northumberland, Shadow Toll P3, UK, Lender**
- **YorkshireLink A1-M1 Link, Shadow Toll P3, UK, Lender**
- **M40, Oxfordshire, Shadow Toll P3, UK, Lender**
- **M6 Toll, Real Toll P3, UK, Lender**
- **SANEF, Real Toll/System Monetization, France, Lender**
- **APRR, Real Toll/System Monetization, France, Lender**
- **SCUTVIAS, Shadow Toll P3, Portugal, Lender**
- **LUSOSCUT, Shadow Toll P3, Portugal, Lender**
- **RAV/Evergreen, Mass Transit P3, Canada, Lender**
- **Sea-to-Sky, Highway P3, Canada, Lender**

digestion technology as wastewater treatment plants. These mandates require PFAL to explore a range of financing alternatives, including low-cost financing under a number of California programs (CalRecycle, California Pollution Control et al).

HOWARD COUNTY COURTHOUSE

HOWARD COUNTY, MARYLAND, ADVISOR TO DEVELOPER | P3 PROJECT

James led PFAL's financial advisory mandate for the winning consortium's proposal to design, build, operate and maintain this $180 million courthouse project. James was responsible for the overall financing strategy, financial optimization, lender outreach, curation of the debt providers' diligence, financial modeling and documentation commentary. Financial close was achieved on October 16, 2018. The project subsequently won P3 Bulletin's award for the best financial structure in 2019.

UNIVERSITY OF KANSAS CAMPUS DEVELOPMENT

LAWRENCE, KANSAS, ADVISOR TO DEVELOPER | P3 PROJECT

James was part of PFAL's financial advisory work on this $350 million university campus development project. After following a progressive procurement, the project reached financial close in January 2016 with a 100% tax-exempt bond solution. PFAL assisted our client in negotiating the key project documents with university officials which included navigating a complex assessment of security arrangements, procuring relevant advisors and service providers, structuring the financing for the project, coordinating all parties' legal counsel to develop the project documentation, and securing a favorable rating for the project debt.

US REAL ESTATE PORTFOLIO

VALUE: $2.8BN/40+ BORROWERS; 2009-2012, LENDER

While at Lloyds Bank (Los Angeles and New York Branches), between 2009 and 2012, James was responsible for a portfolio of over 40 borrowers, with a total exposure of over $2.8bn, with a particular emphasis on real estate in the US. The lending exposures included: residential, hotels/resorts, gaming/casinos, light industrial and commercial real estate assets. This called for a detailed understanding of the differing lending concepts and risk metrics as codified in the loan documentation and well as complex negotiations with borrowers in the context of the economic downturn.

GILCREASE EXPRESSWAY

OKLAHOMA, 2020, FINANCIAL ADVISOR TO BUREAU

PFAL acted as financial advisor to the TIFIA Loan Program in its consideration of a loan for the Gilcrease Expressway project. James lead this engagement and was responsible for the overarching credit worthiness reporting as well as assessing the traffic and revenue risk has been instrumental in the review of credit covenant issues with respect to credit support provided to the project by the Oklahoma Turnpike Authority and the Oklahoma Department of Transportation.

EDUCATION

Master of International Affairs, Columbia University, School of International and Public Affairs

Bachelor of Arts – Geography / Environmental Science, University of California, Los Angeles

LICENSES + ACCREDITATIONS

MSRB Series 50

PROFESSIONAL ACTIVITIES

Member, Women in Infrastructure Network

Panel Moderator, P3C Dallas 2017, 2018

Panel Speaker, Broadband P3s, Infra Americas 2017

Speaker, California Infrastructure Delivery, P3 Hub West

Speaker, ASCE Speaker Series at Stanford University

Speaker, Water Infrastructure Public Private Partnerships

Deputy Project Manager/Engagement Oversight

VICTORIA TAYLOR

PRESIDENT & CEO

Victoria (Tori) has over 20 years of experience in infrastructure and project finance. She has personally led the execution, analysis, and management of nearly $30 billion worth of infrastructure transactions using project and traditional financing. As a result, she has an extensive body of experience and knowledge in project structuring, commercial negotiations, and financing strategies.

In her capacity as a financial advisor with PFAL and as a former advisor and lender with both DEPFA Bank and WestLB, Tori has been responsible for advising government clients on optimal delivery methods for large scale infrastructure projects, including running risk workshops, performing value for money analysis, evaluating capital programs including optimal financing strategies, performing due diligence, advising governments on international best practice, performing credit and risk analysis, and securing financing for large-scale infrastructure projects.

EXPERIENCE RELEVANT TO CURRITUCK COUNTY

Tori's commercial acumen and understanding of the requirements of debt and equity investment in infrastructure projects allows her to structure transactions that are attractive to the market but also protect the public interest. Tori also has extensive experience in structuring financing alternatives drawing on diverse funding sources, including bank debt, private activity bonds, federal loan programs, traditional tax-exempt debt, and complementary derivative products.

Relevant Experience

CITY OF LOS ANGELES SANITATION DEPARTMENT CLEAN WATER CAMPUS

CALIFORNIA, CLIENT: LASAN, FINANCIAL ADVISOR

Tori is overseeing the work being done by the PFAL team that was appointed to assess funding and delivery options for the new Clean Water Campus being considered in downtown Los Angeles. This work includes presenting to senior level officials, assessing different procurement/delivery strategies, and providing clear and succinct presentations and documentation of our research and findings.

STANISLAUS REGIONAL WATER AUTHORITY SURFACE WATER SUPPLY PROJECT

CALIFORNIA, FINANCIAL CONSULTANT | DB PROJECT

Tori led the PFAL team's financial advisory work to assist the Water Authority's program manager in developing and issuing a procurement for a design build contract that will help improve consistency in water supply

VICTORIA TAYLOR
President & CEO

to Stanislaus County. As part of this work PFAL developed the financial criteria for respondents, reviewed financial submissions, and provided analysis and opinions on the financial strength of the respondents.

SAN JOAQUIN PUBLIC WORKS

CALIFORNIA, FINANCIAL ADVISOR TO OWNER

Tori is leading the PFAL team's financial advisory work on the new San Joaquin Public Works facilities. This feasibility assessment includes a site analysis, risk assessment and workshop, value for money analysis, and identification of affordability alternatives.

SAN JOAQUIN SOLID WASTE DIVISION

CALIFORNIA, FINANCIAL ADVISOR TO OWNER

Tori is leading the PFAL team's financial advisory work to assess alternatives to deliver a new solid waste transfer station for San Joaquin County. Our assessment includes defining the project, a risk assessment, site identification, coordination with other regional governments, and considering integration of facilities required to comply with SB 1383.

SONOMA COUNTY GOVERNMENT CENTER

CALIFORNIA, FINANCIAL ADVISOR TO OWNER | P3 PROJECT

Tori is overseeing the PFAL team's financial advisory work on the new Sonoma County Government Center, which is expected to be delivered as a DBFOM P3.

AUGUSTANA UNIVERSITY CAMPUS EXPANSION

SIOUX FALLS, SOUTH DAKOTA, FINANCIAL ADVISOR TO OWNER | DB PROJECT

Tori led the PFAL team's financial advisory work on this $90m tax exempt financing that supported the development of new campus housing and other critical facilities needed to support Augustana's expected growth.

MBTA AUTOMATED FARE COLLECTION

BOSTON, MASSACHUSETTS, FINANCIAL ADVISOR TO DEVELOPER | P3 PROJECT

Tori led the PFAL team's financial advisory work on this $275m P3 project. Financial close was reached in March 2018. Tori oversaw all financial modelling work, documentation analysis, debt provider outreach and assessment, and financial structuring. The project bid was submitted in October and PFAL's client was named as the preferred proponent in November having successfully won the evaluation on both the technical and financial score. In 2019 this project received the Silver Medal for Transit Projects from P3 Bulletin.

HOWARD COUNTY COURTHOUSE

ELLICOT CITY, MARYLAND, 2018, FINANCIAL ADVISOR | P3 PROJECT

Tori oversaw the PFAL team's work as financial advisor to the successful bidder for this availability payment-based courthouse project in Maryland. PFAL's scope of work included the full range of financial advisory services including financial modelling, conceptual structuring, corporate credit analysis, lender outreach and funding competition strategy and execution, due diligence development oversight and management, Project Agreement and drop down agreement commentary, agreeing term sheets, and securing committed financing for the project.

VICTORIA TAYLOR
President & CEO

UNIVERSITY OF KANSAS CAMPUS EXPANSION

LAWRENCE, KANSAS, ADVISOR TO DEVELOPER | P3 PROJECT

Tori led the PFAL team's financial advisory work on this $383m university expansion project. The project reached financial close in January 2016 with a 100% tax-exempt bond solution. PFAL assisted our client, Edgemoor, in negotiating the key project documents with university officials which included navigating a complex assessment of security arrangements, procuring relevant advisors and service providers, structuring the financing for the project, coordinating all parties' legal counsel to develop the project documentation, and securing a favorable rating for the project debt. Tori oversaw the development of the financial model, risk analysis, due diligence, deal structuring advice and rating agency strategy advice.

KANSAS CITY INTERNATIONAL AIRPORT'S TERMINAL A

KANSAS CITY, MO, ONGOING, $1.5 BILLION | P3 PROJECT

Tori led the PFAL team that providied financial advisory services to Edgemoor Infrastructure & Real Estate, the developer selected to undertake the $1.5 billion capex improvement at Kansas City International (KCI) Airport. The Edgemoor-led team was selected as the preferred bidder for the project. The city noted that it selected the team because it determined that Edgemoor submitted the best overall proposal, with the best value, a financing plan that preserves the city's credit, and a flexible, collaborative approach to creating the terminal design.

SANTA CLARA INTERNATIONAL SWIM CENTER

CALIFORNIA, FINANCIAL ADVISOR | POTENTIAL P3 PROJECT

Tori acted as the project director to the PFAL team that provided financial advisory and project management services to the City of Santa Clara. The work PFAL performed included: developing and evaluating financial strategies through Value-for-Money and funding capacity/options; public opinion research on options developed; the formation of a capital campaign team to assist in raising private/corporate donations and sponsorships, community information/outreach, and the development and negotiation of potential P3 risk allocations for the delivery (design, construction, maintenance and operation) of a new $150 million, 171,000 square foot International Swim Center, Community Recreation Center and International Swimming Hall of Fame and parking in Santa Clara's Central Park. Currently, the City is considering priority infrastructure projects with potential new tax measure potential projects including community recreation, park improvements, library expansion, fire station improvements and flood protection.

SOLANO TRANSPORTATION AUTHORITY PARKING STUDY AND DELIVERY OPTIONS ANALYSIS

CALIFORNIA, FINANCIAL ADVISOR | POTENTIAL P3 PROJECT

In partnership with STA and DKS, Tori is overseeing PFAL's work as a consultant to the Solano Transportation Authority for Solano Parking Demand Study. This study calls for a consultant to analyze current parking demand (transit, carpool, and vanpool), forecast future needs, recommend

VICTORIA TAYLOR
President & CEO

capital improvements to existing facilities, survey sites for new facilities, and provide planning-level cost estimates for the construction, operation, and maintenance of new facilities. PFAL's role is to consider delivery alternatives to accelerate the effective construction and monetization of the county's parking facilities; fund O&M for existing and future facilities, reduce capital and on-going costs, improve service delivery for users, leverage funding opportunities, develop alternative revenue sources and opportunities to offset project costs, and assess viable project delivery and service models including P3's.

SR-37

NORTHERN CALIFORNIA, ONGOING, FINANCIAL ADVISOR | POTENTIAL P3 PROJECT

Tori oversaw the team performing financial advisory work for the Solano County Transportation Authority. This work includes assessing multiple delivery options, including alternative delivery strategies, identifying alternative financing sources, and market outreach.

CALIFORNIA HIGH SPEED RAIL

CALIFORNIA, ONGOING, INDEPENDENT FINANCIAL ADVISOR

California high-speed rail will connect the mega-regions of the state, contribute to economic development and a cleaner environment, create jobs and preserve agricultural and protected lands.

Tori is currently overseeing the multi-disciplinary PFAL-led team in the work to provide independent assessment of the suitability of individual segments to access state funds that have been allocated to the system under strict utilization requirements. The work PFAL has been engaged to do includes assessing the feasibility analysis of different phases of the project and the intended delivery method.

LA RIVER REVITALIZATION URBAN GREENING

LOS ANGELES, CALIFORNIA, 2013-2015, ECONOMIC DEVELOPMENT ADVISOR

As part of the Urban Greening initiative, PFAL was engaged to provide financial and economic advice to the LA River Corp to help best maximize revenue- generation opportunities and to leverage scarce funds with real estate sales and PPP opportunities. PFAL was responsible for considering the best possible phasing of different real estate development opportunities and for considering the financial plans of different business alternatives that are available for implementation in the river catchment area.

The LA River Urban Greening won the design award from the AIA California Council for Urban Design in 2015.

PFAL

EDUCATION

M.B.A., University of Chicago Booth School of Business

Master of Planning, University of Southern California

Bachelor of Science, Civil Engineering, University of Notre Dame

LICENSES + ACCREDITATIONS

MSRB Municipal Advisor Representative (Series 50)

FINRA, Series 7, 63, 79 (Previously Registered)

Licensed Professional Engineer in the State of Illinois

PROFESSIONAL ACTIVITIES

Member, American Society of Civil Engineers

Faculty, P3 Bootcamps, Nashville (June 2018) and Chicago (September 2018), National Council for Public Private Partnerships (NCPPP)

Purple Line Light Rail Transit Project awarded North American Rail Deal of the Year in 2017 by IJGlobal

Panelist, 2015 Bond Buyer Transportation Finance / P3 Conference (Denver, CO)

American Society of Civil Engineers, 2011 New Faces Award

Los Angeles County Metropolitan Transportation Authority, 2004 Employee of the Quarter

PROCUREMENT STRATEGIST

DAVID GLOSS

VICE PRESIDENT

David Gloss joined Project Finance Advisory, Ltd. (PFAL) from a major investment bank and brings over 16 years of infrastructure finance and advisory experience, including 8 years of infrastructure investment banking specialized in public-private partnerships (P3s) and project finance.

As a former civil engineer, David also brings a wealth of experience in early-stage project development and feasibility, specializing in project management, financing, funding and delivery alternatives analysis. As a banker and civil engineer, he has worked primarily on projects across North America in nearly all infrastructure sectors including water, wastewater, energy, vertical infrastructure (courthouses and government administration buildings) and transportation (road, rail, airports).

David is an accomplished public finance banker with underwriting and lending experience to governments and not-for-profits including clients such as City of Chicago, State of Illinois, Orlando-Orange County Expressway Authority, Dignity Health as well as for numerous P3 transactions. His strengths include financial & transaction modeling, structuring, negotiation, rating agency coordination, lender outreach, and deal execution.

Relevant Experience

SONONA COUNTY NEW COUNTY GOVERNMENT CENTER

FINANCIAL ADVISOR TO SONOMA COUNTY | P3 PROJECT

For this new county government center project, David, is currently performing financial and technical advisory services toward managing the P3 solicitation process for the government sponsor, Sonoma County. Scope of work includes technical, financial, and commercial advisory including for the site selection process, value for money study, financial modeling, and technical support. David is leading a large team of specialized subconsultants including architectural/design, cost estimating, performance specification drafting, and public and stakeholder involvement. These efforts also support the County's efforts on legal, planning, and environmental workstreams for the project. The project is pre-launch and is expected to launch with RFQ in fall 2021.

FARGO-MOORHEAD FLOOD DIVERSION PROJECT

NORTH DAKOTA, FINANCIAL ADVISOR TO BIDDER | P3 PROJECT

David served as financial advisor to a shortlisted bidder for the Fargo-Moorhead Flood Diversion P3 Project, in North Dakota. The project, being procured by the Fargo-Moorhead Flood Diversion Authority, includes an

DAVID GLOSS
Vice President

approximately $800 million flood diversion channel, inlet and control structures, to minimize flooding in the metro area. David's work for his client, a shortlisted bidding consortium, included managing ongoing financial team meetings, conducting lender outreach, development of the financial model and rating agency process.

LOWER COLORADO RIVER AUTHORITY

TEXAS, FINANCIAL ADVISOR TO AUTHORITY | ASSET DIVESTITURE

David's team served as sole sell-side financial advisor for Lower Colorado River Authority (LCRA) in a major asset divestiture process. David supported his team in this financial advisory capacity as LCRA solicited interest from potential purchasers of its retail water and wastewater systems. The ultimate set of successful transactions included public-to-public and public-to-private transactions as well as a mix of full asset sales, lease-to-own and operating agreements. This permitted LCRA to achieve its goal of reducing its operating risk and achieving the maximum valuation for its retail utility assets while also insuring that the new owners or partners continued to use best practices in the operations of the essential systems. The complex diversity of approaches from Public-to-Public and Public-to-Private transactions combined with asset sales, leases and operating agreements offered a unique, tailored and strategic solution for LCRA.

LCRA's system covers over 20,000 square miles along a 600 mile stretch of the Lower Colorado River in Texas. It is one of the largest water districts in the U.S. Over its long history, it had acquired and developed over 30 retail water and wastewater systems (some of which were under-developed) and for which LCRA had invested significantly. LCRA made the decision that owning these retail water and wastewater entities no longer represented a core focus and thus sought financial solutions.

CONNECTICUT WASTE-TO-ENERGY PROJECT

CONNECTICUCT, FINANCIAL ADVISOR TO PREFERRED PROPOSER | P3 PROJECT

David served as financial advisor to the preferred proposer for a state-of-the-art waste-to-energy project in Hartford, Connecticut. The project, procured by the State of Connecticut Department of Energy and Environmental Protection, includes reconstruction of an existing waste processing and thermal disposal plant into an advanced sorting, recycling, and composting including the latest European technological solutions for a fully enclosed system that would meet the landfill diversion goals of the State.

MIAMI-DADE COUNTY CIVIL & PROBATE COURTHOUSE

FLORIDA, FINANCIAL ADVISOR TO MIAMI-DADE COUNTY | P3 PROJECT

For this new courthouse project, David, performed financial advisory services and managed the P3 bid solicitation for the government sponsor including RFQ/RFP drafting, coordination of legal and insurance, managing a local subconsultant team, bidder negotiations, and bid evaluation. Additionally, David provided key financial modeling functions including primary oversight of the development of the County's financial

DAVID GLOSS
Vice President

model and performing affordability scenarios and calculations, which were also used in payment mechanism drafting and analysis. Frequent updates were required to County board members, key administrative staff and elected officials including updating work on the Value for Money analysis previously performed. David also contributed significantly to the drafting of financial aspects of the procurement documents, and project agreement, including the payment mechanism and deduction regime calibration.

This $267 million project is for a new, 23 story, state-of-the-art modern courthouse facility including 46 jury courtrooms and option for an additional 4 courtrooms to accommodate future growth. The existing, historic courthouse is located on an adjacent property and will be sold by the County. The project later achieved financial close in February 2020.

TRAVIS COUNTY COURTHOUSE

TEXAS, STRATEGIC AND FINANCIAL ADVISOR TO COUNTY | POTENTIAL P3 PROJECT

David served as financial and strategic advisor as part of a larger team to Travis County, Texas regarding alternatives for the development of a new courthouse in downtown Austin, Texas. David performed a feasibility analysis for P3 delivery options for a new approximately $330 million civil and family courthouse. The project contemplated a mixed-used development covering an entire city block in the heart of downtown Austin, Texas including an estimated 3-year construction period.

STATE OF MISSOURI, OFFICE OF ADMINISTRATION

MISSOURI, FINANCIAL ADVISOR TO STATE | POTENTIAL P3 PROGRAM & PROJECTS

David, as part of a joint advisory team was awarded P3 Financial Advisory role for the State of Missouri, Office of Administration for potential project(s) across multiple asset classes, including: road and bridge transportation, social infrastructure, and rail-related assets (passenger and/or freight). The anticipated first project was for the development of a major administrative office building. The scope of work included evaluation of the state's infrastructure plan, advice regarding costs and benefits of such initiatives, including developing and maintaining financial models to support the cost-benefit analysis; assess existing cost, revenue and other information and make recommendations on additional data necessary to refine the financial model, including cost and revenue estimates. Additional tasks include selection of one or more specific projects to be developed under the P3 model and providing detailed analysis and advice on the structuring and execution of selected projects.

SEMINOLE STATE COLLEGE, ALTAMONTE SPRINGS CAMPUS PROJECT

FLORIDA, FINANCIAL ADVISOR TO UNIVERSITY | POTENTIAL P3 PROJECT

David served as financial advisor Seminole State College of Florida in Orlando for the exploration of a P3 project for the Altamonte Springs Campus Project. Scope of work was a coordinated effort with engineering, economic, commercial real estate, and public relations firms regarding the potential development of a P3 project for new campus development. David's work included development of the financial model, financing alternatives, and presentation to the Board.

DAVID GLOSS
Vice President

HAWAII HEALTH SYSTEMS CORPORATION

HAWAII, STRATEGIC ADVISOR TO PUBLIC HEALTH SYSTEM | P3 PROJECT

David supported his bank's role as Strategic Advisor to the Hawaii Health Systems Corporation ("HHSC") in its assessment and execution of Public Private Partnership opportunities. HHSC is a Hawaii public benefit corporation and the fourth largest public hospital system in the United States with annual revenue of approximately $600 million. David's role on the engagement encompassed advisory for 5 distinct regions with a total of 14 facilities. The advisory work required intense diligence, communication and coordination with numerous stakeholders and workgroup members, including the Governor, Attorney General, State Legislators, State administrators, 2 civil service unions, several community groups, HHSC Corporate Board and administration, Regional Board and administration, attorneys, and consultants. His work supported HHSC in preparing for the January 2014 legislative session. Following legislative approval, work also included assisting HHSC in drafting the partnership template, the launch of the search for private partners and subsequent negotiation with the preferred partner.

MAUI MEMORIAL MEDICAL CENTER

HAWAII, STRATEGIC ADVISOR TO PUBLIC HEALTH SYSTEM | P3 PROJECT

Financial Advisor team member to the Maui Memorial Medical Center (MMMC) and Maui region of the Hawaii Health Systems Corporation in its assessment and execution of Public Private Partnership opportunities. HHSC is a Hawaii public benefit corporation and the fourth largest public hospital system in the United States with annual revenue of approximately $600 million. Work included financial alternatives and private partnering solutions for MMMC.

ADDITIONAL PROJECTS

- Joint Lead Agent to Brookfield Renewable, 417MW Safe Harbor run-of-the-river Hydro, $560 MM U.S. Private Placement, December 2016
- Co-Agent to Brookfield Renewable, 252 MW Holtwood run-of-the-river Hydro, $350 million U.S. Private Placement, February 2018
- Joint Lead Bookrunner to Cordelio Power, $656 million private placement notes, November 2018
- Orlando-Orange County Expressway Authority, tax-exempt debt financing
- Chicago Transit Authority Red, Orange, Yellow Line Extension Alternatives Analysis Project

EDUCATION

Masters in Business Administration, University of Gloucestershire, 2012

Bachelor in Finance, Belarusian State Economic University

Advanced Financial Modelling Course, Mazars

PPP Financial Modelling Course, Operis

Management Development Program, London School of Commerce

LICENSES + ACCREDITATIONS

MSRB Series 50

Financial Modeler

NIKITA MANAYENKOV

MANAGER

Nikita is a financial advisor with 7 years of experience providing financial advice, business planning and due diligence advice to public and private sector clients on major infrastructure and real estate projects. He has been involved in projects in the USA, Australia, and the Middle East, performing financial modelling and providing financial strategy, structuring and commercial advice.

He has in-depth experience of sectors including social infrastructure, transport and real estate, and his technical knowledge developed from delivering technical due diligence projects enables him to develop bespoke financial solutions that focus on real project drivers. Nikita brings experience of advising on a wide range of financial issues in technically complex, large-scale public and private infrastructure and real estate projects.

Relevant Experience

CITY OF LOS ANGELES SANITATION DEPARTMENT CLEAN WATER CAMPUS

CALIFORNIA, 2019 - CURRENT, FINANCIAL ADVISOR

PFAL team that was appointed to assess funding and delivery options for the new Clean Water Campus being considered in downtown Los Angeles. Nikita's role includes financial modeling and financial analysis.

SONOMA COUNTY GOVERNMENT CENTER

SONOMA COUNTY, CA, 2019 – ONGOING, FINANCIAL/TECHNICAL ADVISOR TO COUNTY

PFAL is acting as financial/technical advisor to Sonoma County for the Sonoma County Government Center project. The scope of work includes setting goals and objectives, programming and space needs identification across 26 departments, site selection, funding plan and tax assessments including potential incremental revenue streams from tax and other sources, delivery method identification, and stakeholder engagement. Nikita is responsible for performing financial analysis and providing support on financial modeling effort.

SANTA CLARA INTERNATIONAL SWIM & COMMUNITY RECREATION CENTER

CALIFORNIA, 2017 - 2018, FINANCIAL ADVISOR

PFAL provided financial advisory and project management services related to the development and evaluation of financial strategies to the City of Santa Clara. Nikita's role included developing financial model and

NIKITA MANAYENKOV
Manager

performing complex financial analysis to evaluate funding capacity and assess feasibility of the project.

L.A. RIVER REVITALIZATION
LOS ANGELES, CA, 2014, FINANCIAL ADVISOR

PFAL was engaged as part of a consultant team to provide financial and economic advice to the LA River Corp to help best maximize revenue-generation opportunities and to leverage scarce funds with the real estate sales and P3 opportunities. PFAL was responsible for considering the financial plans of different business alternatives that are available for implementation in the river catchment area. Nikita conducted extensive research into private, state and federal funding alternatives that could be utilized to provide seed funding for priority projects.

NVTA BUS MAINTENANCE FACILITY
NAPA, CA, ONGOING, FINANCIAL ADVISOR TO NVTA

PFAL is providing business case analysis, structuring advice, revenue identification, funding and financing strategies analysis, including a TIFIA loan application. As part of this work for this $40m facility, PFAL is also considering funding alternatives to help deliver a new electric bus fleet. Alternatives explored include potential collaboration with the City of Napa, asset disposal, and joint development opportunities. Nikita has built financial model that was used to assess the alternative delivery options and perform financial analysis.

SR-37
SOLANO, CA, ONGOING, FINANCIAL ADVISOR

PFAL is acting as financial advisor to the SR 37 Policy Committee and four joint Counties, Solano, Marin, Napa and Sonoma to investigate financial opportunities to improve the existing 21-mile coastal corridor with a $1-3 billion bridge solution. The current options include full-toll privatization, public-private partnership tolling alternatives, and publicly financed and managed toll facility. Nikita has built financial model that was used to assess the alternative delivery options on a comparative basis.

AUGUSTANA UNIVERSITY CAMPUS EXPANSION
SIOUX FALLS, SOUTH DAKOTA, 2020-2021, FINANCIAL ADVISOR

PFAL team was engaged to perform financial advisory work on the $90m tax exempt financing that supported the development of new campus housing and other critical facilities needed to support Augustana's expected growth. Nikita was lead financial modeler on this project.

KANSAS CITY INTERNATIONAL AIRPORT
MISSOURI, USA, 2017 - ONGOING, FINANCIAL ADVISOR

PFAL was appointed to act as financial advisor to Edgemoor Infrastructure & Real Estate, the developer selected to undertake the $965m capex

NIKITA MANAYENKOV
Manager

improvement at Kansas City International (KCI) Airport. The Edgemoor-led team was selected as the preferred bidder for the project. Nikita wass responsible for performing financial analysis and developing a project financial model.

CONFIDENTIAL UNIVERSITY HEALTHCARE PROJECT

ONGOING, FINANCIAL ADVISOR TO DEVELOPER

PFAL have been selected by an experienced development team to act as their financial advisor for the bid to design, build, finance, and operate a new healthcare project. Anticipated financing structure will require the awardee to cause issuance of tax-exempt bonds pledged by legally available revenues of the hospital. Nikita is responsible for developing the financial model for the bid.

GILCREASE EXPRESSWAY

OKLAHOMA, 2020, FINANCIAL ADVISOR TO BUREA

PFAL is acting as financial advisor to the Bureau in its consideration of a loan for the Gilcrease Expressway project. Nikita is acting as the modeling lead and supporting James in PFAL's assessment of multiple security arrangement proposals and assessing the credit quality of the transaction overall.

C-470 MANAGED LANES

COLORADO, USA, ONGOING, FINANCIAL ADVISOR TO BUREAU

As advisor to TIFIA, Nikita supported the PFAL team providing assessment of the creditworthiness and loan application for financing this managed lanes project. Nikita's work included review of traffic and revenue risks, construction risks, financial structure risks up to and including credit negotiations. Our work also included providing analysis of the reasonableness of traffic and revenue forecasts and likelihood of loan repayment. Nikita provided assistance in reviewing the financial model.

TRANSFORM 66 (OUTSIDE THE BELTWAY)

VIRGINIA, USA, 2016, 2ND FINANCIAL ADVISOR FOR TIFIA, $3.6 BILLION | P3 PROJECT

PFAL was engaged to conduct an independent peer review of the financial advisory report prepared by TIFIA's financial advisor for the Transform 66 project. Nikita's role in the audit process included review of the preferred bidder's financial model to analyze if the financing risks have been properly captured in the payment components. Nikita also reviewed the bidder's financial proposal to ensure the pricing and technical inputs match the model figures across several traffic scenarios.

EDUCATION

Bachelor of Arts – Economics / Political Science, Northwestern University

LICENSES + ACCREDITATIONS

FINRA Series 50
FINRA Series 63, 79 (Previously Registered)

Financial Modeler/Reviewer

ANDREW SHINN

ASSOCIATE

Andrew is a financial advisor with experience providing financial advice, due diligence advice, and execution assistance to public and private sector clients on major social and transportation infrastructure projects. He has been involved in projects across North America performing financial modelling and providing financial strategy, structuring and commercial advice.

He has in-depth experience in infrastructure, and his technical knowledge developed from delivering technical due diligence projects enables him to develop bespoke financial solutions that focus on real project drivers. Andrew brings experience of advising on a wide range of financial issues in technically complex, large-scale public and private infrastructure projects.

Relevant Experience

CONNECTICUT WASTE-TO-ENERGY FACILITY MODERNIZATION

CONNECTICUT, FINANCIAL ADVISOR TO PREFERRED BIDDER

Provided financial advisory services to Sacyr and Manhattan Construction Group in their DBFOM bid to upgrade a waste-to-energy facility in Connecticut. Andrew prepared valuation sensitivity analyses and prepared client presentation material.

DC STREETLIGHTS MODERNIZATION

US, FINANCIAL ADVISOR TO SHORTLISTED BIDDER

Provided financial advisory services to Meridiam in its DBFOM bid. Andrew performed financial modelling, assisted in bond rating agency discussions, and prepared bid documents for submittal to the procuring authority.

AUTOROUTE A-25 TOLL BRIDGE

QUEBEC, FINANCIAL ADVISOR TO SHORTLISTED BIDDER

Provided financial advisory services to DIF and Fiera Infrastructure in their bid to acquire 35-year concession of 7km toll bridge in Montreal. Andrew assisted in financial modelling and bond rating agency discussions.

ANDREW SHINN
Associate

AIRGLADES INTERNATIONAL AIRPORT
FLORIDA, FINANCIAL ADVISOR TO OWNER CONSORTIUM

Provided financial advisory services to the Airglades International Airport consortium, owners of a privately-owned greenfield cargo airport soliciting operators, developers, and equity investors for the project. Andrew's role included developing the financial model and assisted in investor outreach and marketing.

MICHIGAN I-75 MODERNIZATION
MICHIGAN, FINANCIAL ADVISOR TO DEVELOPER

Provided financial advisory services to John Laing and AECOM Capital in their successful bid to design, build, finance and maintain a 5.5 mile route in suburban Detroit that includes the reconstruction of existing freeway lanes and drainage tunnels. Andrew performed financial modelling, assisted in bond rating agency discussions, and prepared bid documents for submittal to the procuring authority, the Michigan Department of Transportation.

MIAMI-DADE COUNTY CIVIL & PROBATE COURTHOUSE
FLORIDA, FINANCIAL ADVISOR TO COUNTY

Provided financial advisory and project management services to Miami-Dade County in its procurement process to design, build, finance, operate and maintain a new courthouse building in Miami. Andrew was responsible for performing financial analysis and developing a project financial model.

MIAMI BEACH LIGHT RAIL / MODERN STREETCAR (PROPOSED)
FLORIDA, FINANCIAL ADVISOR TO PREFERRED DEVELOPER

Acted as financial advisor to the InfraRed/Alstom/Walsh consortium after selection as preferred bidder to design, build, finance, operate a proposed light rail transit connection between Miami and Miami Beach. Andrew modeled financing alternatives and escalation scenarios for the team.

GILCREASE EXPRESSWAY
OKLAHOMA, FINANCIAL ADVISOR TO SHORTLISTED DEVELOPER

Acted as financial advisor to the Manhattan/Sherwood consortium in its bid to design, build and finance a 5-mile, four-lane tollway. Andrew served as the financial modelling lead during the team's development of a competitive financing structure for the project.

CLACKAMAS COUNTY COURTHOUSE
OREGON, FINANCIAL ADVISOR TO SHORTLISTED BIDDER

Acted as financial advisor to Balfour Beatty in its DBFOM bid process for a new courthouse building in Clackamas County. Andrew performed financial modelling on financing alternatives and affordability scenarios.

Eric (Rick) J. Sapir

Partner

Rick Sapir joined Hawkins upon graduation from law school in 1986 as an associate in the solid waste and municipal utilities group. He soon began working on waste-to-energy projects which launched his career as a public contracts lawyer in the solid waste, recycling, water, wastewater, residuals, renewable energy and social infrastructure fields. Rick has worked exclusively as owner's representative and has helped structure, procure, draft and negotiate contracts involving every form of complex alternative delivery method.

Rick has served as lead negotiating counsel for over 100 engagements on complex public contracts. His practice spans North America where he has served as special counsel for the development of environmental facilities in over 20 States, three Provinces and two Territories. Rick's services regularly include advising on project planning and delivery matters, structuring of the procurement to ensure compliance with law and to maximize the optimal competition, preparation of procurement documents, helping clients review, clarify, understand and evaluate proposals, and the drafting and negotiation of the key project agreements.

Among the clients that Rick has assisted with complex infrastructure projects are: New Hanover County, NC (Waste-to-Energy, MRF, Transfer, Transportation and Disposal); Greensboro, NC (Recycling and Transfer, Transportation and Disposal); Wake County, NC (Landfill Gas-to-Energy, Landfill DBOM); the City of Los Angeles (Waste-to-Energy); Lake Oswego, OR (Wastewater Treatment); Rahway Valley Sewerage Authority (Biogas); Honolulu Board of Water Supply (HI) (Water Desalination); California American Water (Drinking Water Desal); Camden County Municipal Utilities Authority (Residuals Processing and Solar); Tacoma, WA (Wet Weather Wastewater Upgrade); City of Fillmore, CA (Wastewater Treatment); Monmouth County, NJ (Waste-to-Energy, Baling, Landfill Gas-to-Energy, Leachate Treatment, Recycling, Household Hazardous, Waste, Bulky Waste Transportation and Disposal and Solar); Metro Vancouver (Waste-to-Energy); Virgin Islands Waste Management Authority (RDF, Baling/Transfer); Fulton County, GA (Wastewater Treatment); Nashville, TN (Residuals Processing); San Marcos, TX (Water and Wastewater); Halifax Metropolitan Authority (Waste-to-Energy); County of Hawaii (Waste-to-Energy); Northeast Maryland Waste Disposal Authority (Waste-to-Energy); Spokane County, WA (Wastewater); Orangeville, Ont. (Wastewater); Glasgow, KY (Landfill Gas-to-Energy); Rahway Valley Sewerage Authority, NJ (Cogen and Residuals Processing); Clarkstown, NY (Transfer Station); New Jersey School Construction Authority (School) and New Jersey City University (Dormitories).

Rick has been the Legal Advisory Member of the New Jersey Chapter of the Solid Waste Association of North America and is an active member of the New Jersey Association of Environmental Authorities and the New Jersey/New York/Connecticut Chapter of the Design Build Institute of America. Rick has lectured on P3 and alternative delivery issues before several forums including several P3 Summits, the Design-Build Institute of America, the Solid Waste Association of North America, the National Council for Public-Private Partnerships, Biocycle, Water Environment Federation, the Compost Council, the EPA LMOP Program, the Public Securities Association, the New Jersey Association of Environmental Authorities, the New York City Bar Association and the New York State Legislative Commission on Solid Waste, and he is a faculty member for a class provided at the annual Wastecon Conference regarding the development of waste-to-energy facilities.

CONTACT

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PRACTICE AREAS

Alternative Project Delivery
Project Finance
Public-Private Partnerships

INDUSTRIES

Education
Power and Renewable Energy
Public Buildings
Solid Waste
Transportation
Water

EDUCATION

Union College, B.A.

Fordham University School of Law, J.D.

ADMITTED

New Jersey
New York
Connecticut

Hawkins DELAFIELD & WOOD LLP

Megan I. Sartor

Counsel

Megan Sartor joined Hawkins Delafield & Wood LLP in 2008 as an associate in the Public Contracts Group. During her time at the firm, Megan has focused on the procurement and implementation of public infrastructure on alternative project delivery bases in the solid waste management, recycling, renewable energy, residuals, water and wastewater treatment sectors. Projects in which Megan has served as special counsel include the procurement and negotiation of a new leachate pretreatment facility for the County of Monmouth, New Jersey; the negotiation of two waste-to-energy contracts for the U.S. Virgin Islands Waste Management Authority; the negotiation of a long-term operations agreement for a biosolids dryer facility for the Camden County Municipal Utilities Authority; the development of multiple solar energy projects for Monmouth County, New Jersey; an energy-from-waste facility retrofit and long-term operations agreement on behalf of New Hanover County, North Carolina; and the development of landfill gas-to-energy projects for the City of Greensboro, North Carolina and Wake County, North Carolina.

Megan has also participated in other projects for the County of Monmouth, NJ (Materials Processing and Recovery Facility, Recycling, Landfill Gas-to-Energy, Household Hazardous Waste, Solar, Third Party Energy Supply and Cogeneration); Camden County Municipal Utilities Authority, NJ (Solar, Biosolids Digestion, and CHP); Morris County Municipal Utilities Authority, NJ (Recycling and Transfer Station); Cumberland County Improvement Authority, NJ (Solar and Landfill Gas-to-Energy); City of Greensboro, NC (Recycling, Transportation and Disposal); New Hanover County, NC (Transfer, Transportation and Disposal); Virgin Islands Waste Management Authority (Transfer Station, Landfill Gas-to-Energy); County of Madera, CA (Transfer Station); and Flathead County, MT (Landfill Gas-to-Energy).

Megan has been involved in the development and drafting of various requests for qualifications, requests for proposals, requests for bids and other procurement documents, and in the drafting and negotiation of various P3 agreements, including design-build, design-build-operate-maintain and design-build-finance-operate service contracts and related agreements.

Prior to joining the firm, Megan served as a law clerk in the State of New Jersey Superior Court, Law Division. Megan is a member in good standing of the bars of the State of New Jersey and the State of New York and currently serves as a Board Member of the New Jersey Chapter of the Solid Waste Association of North America (SWANA).

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PRACTICE AREAS

Alternative Project Delivery
Public-Private Partnerships

INDUSTRIES

Renewable Energy
Solid Waste
Water and Wastewater

EDUCATION

Rutgers University, B.A., magna cum laude

Seton Hall University School of Law, J.D.

ADMITTED

New Jersey
New York

Hawkins
DELAFIELD & WOOD LLP

Andrew D. Ligon
Associate

Andrew Ligon is an associate in the Public Contracts Group. During his time at the firm, Andrew has focused on the procurement and implementation of public infrastructure on alternative project delivery bases in the social infrastructure, power and renewable energy, transportation, water treatment, and solid waste sectors. Projects in which Andrew has served as special counsel include a public-private partnership (P3) courthouse project for Howard County, Maryland; a P3 fiber optic network for San Francisco, California; a solar power purchase agreement for DC Water and Sewer Authority; the development and management of a landfill gas cogeneration project for the City of San Diego; a wastewater facility DBO in Springfield, MA, and the demolition of certain dams in the Klamath River Basin. Andrew also represents clients on bond issuances.

Andrew has assisted in the development and drafting of various requests for qualifications, requests for proposals and other procurement documents, and in the negotiation and drafting of various alternative delivery agreements, including design-build, progressive design-build and design-build-finance-operate-maintain (P3) service contracts and related agreements.

Prior to joining the firm, Andrew practiced at an international law firm and specialized in mergers and acquisitions and corporate securities. Andrew is a member in good standing of the bar of the State of New York.

CONTACT

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PRACTICE AREAS

Alternative Project Delivery
Project Finance
Public-Private Partnerships

INDUSTRIES

Public Buildings
Power and Renewable Energy
Solid Waste
Transportation
Water

EDUCATION

Vanderbilt University, B.A., *magna cum laude*

Duke University School of Law, J.D., *cum laude*

ADMITTED

New York

North Carolina

BRIAN SHELL, P.E.

Co-Service Area Manager, Water & Energy
Alternative Delivery Advisory Services
Senior Technical Principal

Years with the firm

7

Years of experience

11

Education

B.S., Environmental Engineering, Specializing in Environmental Management & Economics, The Johns Hopkins University

Graduate Studies, Occupational Safety and Environmental Law, Bloomberg School of Public Health at The Johns Hopkins University

Professional registrations

Professional Engineer - Environmental: Maryland (42939)

Professional affiliations

Water Environment Federation

Chesapeake Water Environment Association

Association for the Improvement of American Infrastructure;

Young Professionals in Infrastructure

CAREER SUMMARY

Brian Shell is a senior technical principal and consultant with WSP and is co-lead for all water alternative delivery engagements. He is a licensed professional engineer with a technical background that spans facility/asset management, water & wastewater, stormwater and transportation projects. Brian's focus is on providing oversight and technical input, especially as clients work to select the optimal alternative project delivery method for their project. He has experience across the range of project delivery methods in all project stages from pre-procurement activities for marketing sounding through to RFQ/RFP development, proposal evaluation, negotiation, and developing contract administration programs.

PROFESSIONAL EXPERIENCE

- **Confidential Client, West Coast U.S. Desalination Asset Due Diligence**: Mr. Shell led the project team to identify the key operational and risk provisions within each of the Water Purchase Agreement (WPA), the facility's key permits, the O&M Service Agreement's terms and condition, financial model, and related material contracts. The team provided a review of the status of the Plant's pending NPDES permit renewal, and its regulatory compliance. Mr. Shell also led the team's inspection for a condition assessment and reviewed the plant's asset condition and asset management program and practices. Our team assisted the Client's financial and legal advisors on technical aspects of legal risk issues or financial modelling assumptions and conditions.
- **BWS's DBOM Kalaeloa Seawater Desalination Facility Project - City of Honolulu, Hawaii:** consultant for the City of Honolulu Kalaeloa Seawater Desalination Project. The project scope included project, planning and reporting, scheduling, development of a Request for Proposals for a DBOM contractor, development of an Indicative Design Package, development of the Contract Design Requirements for a 1.7 MGD RO seawater desalination plant. Mr. Shell focused on evaluation criteria and the evaluation process.
- **Water Environment Federation (WEF) MOP Revision**: Served as a co-author for the revision of WEF's Manual of Practice 27, titled Financing and Charges for Wastewater Systems. His involvement is focused on writing the new chapter on Internal Financing Alternatives which discusses P3s. Also contributor to WEF MOP 28: Manual of Practice 28: Planning, Design, and Implementation for New and Upgraded Water Resource Recovery Facilities.
- **Total Maximum Daily Load (TMDL) Program P3 Feasibility**, Maryland State Highway Administration (SHA), Baltimore, Maryland: Served as the technical reviewer for this project which involved a high-level review, screening and policy analysis that describes the possibility of using a public-private partnership (P3) solicitation method to develop and implement the TMDL Program for the Maryland SHA. The Program also included identified projects that meet performance requirements and that, at a minimum, meet the federally mandated TMDL performance measures.
- **OP3 Advisory Services**, Washington, DC: The Henry J. Daly Building functions as the headquarters for the Metropolitan Police Department and federal homeland security response center. Mr. Shell served as the technical provisions manager, responsible for coordination amongst all technical disciplines for client on this unsolicited P3 proposal.
- **UPPCO Energy Procurement Advisory Services, Michigan:** Procurement Manager leading the procurement of a solar photovoltaic power generation facility for UPPCO. Tasks include supervisory responsibility for generating a bidders list, drafting all communications to bidders, hosting procurement documents, designing online document

portal, reviewing of all documents prior to issuance, and drafting a procurement report which will be submitted to the Michigan Public Service Commission.

- **Purple Line Light Rail Transit P3**, Maryland Transit Administration, Washington, DC and Maryland: Manager responsible for ensuring quality of all P3 contract documents – request for qualifications (RFQ), instructions to proposers, comprehensive agreement and technical documents for this $2.4 billion light rail project in the Washington, DC suburbs. Led interface with market during original solicitation and replacement of design-builder.
- **PMO Phase I, Gap Analysis:** City of Baltimore, Department of Transportation, Baltimore, Maryland. Project Manager that led team through detailed gap analysis study determining where current organizational practices either do not meet agency needs or exceed industry standards and best practices. This task included an as-is organizational assessment, human capital assessment surveying every employee, business process mapping, a SWOT analysis, and the identification of critical issues and corresponding recommendations in a final report.

PREVIOUS EXPERIENCE

Before joining WSP, Mr. Shell's experience includes:

- Piscataway Wastewater Treatment Plant (WWTP) Facility Plan, Washington Suburban Sanitary Commission, Accokeek, Maryland: Served as deputy project manager for this facility-wide study to determine the prioritization of future projects at the WWTP. He supervised the work of subcontractors to perform preliminary surveys of existing facilities at the plant and conducted analyses of numerous potential projects based on level of service goals for a 20-year planning period. Analyses included construction of a business case for each of the more than 20 proposed projects including a life cycle cost analysis, risk assessment, validation and benefit cost analyses for CIP prioritization.
- Anaerobic Digestion and Combined Heat and Power Feasibility Study, Washington Suburban Sanitary Commission, Laurel, Maryland: Served as the project engineer who completed technical memoranda and financial cost estimate analyses. The goal of this study was to determine appropriate technologies and optimal location of a new biosolids facility for several wastewater treatment plants in the sensitive Chesapeake Bay area. The study showed that more than 1.7 megawatts of energy could be produced from biomass resulting in an energy savings to the agency of more than $1.5M annually, along with disposal and chemical savings of about $1.7M, while reducing greenhouse gas production by almost 6 tons annually. This project was largely funded by a grant from the U.S. DOE.
- Western Branch WWTP Enhanced Nutrient Removal and Facility Upgrade, Washington Suburban Sanitary Commission, Upper Marlboro, Maryland: Served as deputy project manager for this $60 million+ upgrade of a wastewater treatment plant to facilitate compliance with the National Pollution Discharge Elimination System (NPDES) permit. Financing was secured through a low interest Maryland Department of the Environment (MDE) loan for this project. He facilitated coordination of engineering clarifications needed by the contractor with the engineering design center.

  Naval Facilities Engineering Command Washington, NSAA WWTP Water Reuse, Annapolis, Maryland: Evaluated treated wastewater reuse as a nutrient offset in lieu of urban stormwater retrofits to assist a Maryland client in planning for Chesapeake Bay total maximum daily load (TMDL) requirements while fulfilling irrigation needs of the iconic United States Naval Academy Golf Course. He assisted with WWTP historical data analysis, performed capital and operations and maintenance cost analyses, assisted with creation of design options report and performed GIS-based mapping of potential floodplains, required buffer zones and other parameters.

STEPHEN (STEVE) TARALLO

Sr. Director, District Business Line

Years with the firm

1

Years total

33

Areas of practice

Business Case Evaluations

Energy Management

Sustainability Assessments

Wastewater Process

Other languages

French

CAREER SUMMARY

Stephen (Steve) Tarallo has more than 30 years of experience in municipal water and wastewater treatment research and development, design, and project development. He has been involved in a wide variety of environmental engineering solutions, from water treatment technology selection and design to wastewater collection system odor/corrosion control to advanced wastewater process design to biosolids processing and disposal evaluations. His technical responsibilities have included assessment of treatment deficiencies, development and selection of treatment process alternatives, energy optimization studies, renewable energy alternative evaluations, greenhouse gas emissions inventories, life cycle analyses, life cycle cost estimating, and sustainability assessments.

Steve's broad technical background, work experience, and business acumen has provided him with the ability to gain deep understanding of clients' operational and financial needs and challenges. He has a strong ability to understand the interrelationship between regulatory, community, technological, financial, and managerial issues, and to apply a variety of tools, methods, and resources to develop sound, cost-effective, and sustainable solutions for clients.

Steve has extensive experience leading multi-disciplinary teams to deliver a wide variety of water/wastewater engineering projects with fees ranging from less than $50,000 to $20 million.

EDUCATION

MBA, Business Administration, College of William & Mary	1999
BE, Mechanical Engineering, Villanova University	1989

PREVIOUS EXPERIENCE

Before joining WSP, Steve's experience included:

— **Brooklyn Wastewater Pumping Station Design, Baltimore County, Maryland**: Principal-in-Charge. Engineering services were provided for the design and bidding phases for upgrades to Brooklyn Wastewater Pumping Station and design of a Thioguard (magnesium hydroxide) chemical dosing system in city of Baltimore

— **Deep Run Interceptor Improvements Phase 2, Howard County, Maryland**: Principal-in-Charge. Project involved the preparation of specifications and cost estimating of approximately 5 miles of replacement sanitary sewer main ranging from 15 inches to 36 inches.

— **City of Baltimore On-Call Civil/Structural Water/Wastewater Facilities, Maryland**: Principal-in-Charge for an on-call contract to evaluate operation and maintenance problems at three sewage pump stations and provide recommendations for improvements at Stoney Run (cavitation issues), Caroline Street (pump failures), and Brooklyn (evaluation and rehabilitation recommendations) pump stations.

— **North River Wastewater Treatment Plant Cogeneration and Electrification Improvements Facility Plan, New York, New York**: Project Director responsible for the delivery of project scope including the replacement of the existing dual fuel engines with electric motors and associated improvements to the electrical system. New engine generators utilized to supply 10 megawatts of power and on-site heat recovery to the plant.

— **Oakwood Beach Water Pollution Control Plant Primary Power Distribution Transformers Replacement, New York, New York**: Project Director responsible for the

delivery of design and construction management services to replace the primary power distribution transformers.

- **Reconstruction of Manhattan, Bronx Grit Screens at Wards Island Water Pollution Control Plants, New York, New York**: Project Director responsible for delivery of pre-design and design services for the replacement of eight bar screens at the Wards Island Water Pollution Control Plant Headworks Facilities located at the Bronx and Manhattan Grit Chambers. The Bronx (369 million gallons per day) and Manhattan (182 million gallons per day) grit chambers provide preliminary treatment of combined sewer overflow flows prior to the Wards Island Water Pollution Control Plant.
- **Philadelphia Water Department Utility-wide Energy Plan Implementation, Philadelphia, Pennsylvania**: Task Leader for innovation planning focused on the evaluation of the energy program's progress towards its strategic goals. Steve also assisting the Energy Team in the tracking and assessment of the industry trends, as well as the evaluation, documentation, and presentation of emerging energy technologies.
- **Water Environment Research Foundation; Project No. ENER6C13 Utility of the Future Energy Findings, Alexandria, Virginia**: Principal Investigator led multi-disciplinary research team and lead author of a report that estimated the energy embedded in domestic wastewater in the United States relative to the energy required to accomplish treatment. The report also compared the cost (levelized cost of energy) of moving the sector towards energy recovery to levelized costs of energy of other renewable and non-renewable energy sources.
- **Washington Suburban Sanitary Commission Strategic Energy Plan, Laurel, Maryland**: Technical Director responsible for content development for Washington Suburban Sanitary Commission's comprehensive 10-year strategic energy plan covering energy efficiency, load management, renewable energy, and energy supply. The project included the development of strategic energy goals, key performance indicators, strategic energy objectives, and supporting projects and initiatives.
- **North River Wastewater Treatment Plant Cogeneration and Electrification Project, New York, New York**: Task Leader for energy profile responsible for documenting Energy Profiles and conducting energy/greenhouse gas performance analysis for the North River Wastewater Treatment Plant before and after electrification of the main sewage pumps and aeration blowers, installation of engine generators and various digester and heat recovery improvements. Energy Profile documentation was maintained and updated throughout the detailed design process. Design alternative evaluations were summarized to the extent that the alternatives addressed equipment, systems, methods, or operating procedures that would reduce energy consumption, increase energy efficiency, and decrease greenhouse gas emissions.
- **City of Hollywood Department of Public Services Energy Efficiency Master Plan, Hollywood, Florida**: Technical Director responsible for identifying and coordinating decision frameworks, tools, models, and professional staff resources to deliver a comprehensive, integrated energy efficiency master plan to help the city of Hollywood Department of Public Services achieve significant reductions in the usage and cost of energy at its water and wastewater treatment plants, distribution and collection pumping facilities, and water and wastewater treatment facility buildings.
- **Energy Balance and Reduction Opportunities, Case Studies of Energy-Neutral Wastewater Facilities and Triple Bottom Line Research Planning Support, Alexandria, Virginia**: Co-Principal Investigator led a multi-disciplinary research team to investigate energy efficiency and production opportunities that achieve energy neutral wastewater treatment. The project developed baseline energy flows for common wastewater treatment

plant process configurations, including opportunities for demand reduction, energy efficiency, and energy recovery; compiled energy neutral (or near neutral) wastewater treatment plant case studies from throughout the world; and identified sustainable options for managing biosolids through a triple bottom line assessment of diverse technical and management approaches.

— **Hampton Roads Sanitation District Biosolids Resource Recovery MasterPlan, Virginia Beach, Virginia**: Task Leader for business case evaluation performed analysis to evaluate and rank biosolids management system alternatives on the basis of triple bottom line evaluation criteria and financial risk mitigation analysis. Financial risk mitigation analysis was performed on net present value cost estimates utilizing Monte Carlo simulations with future regulatory scenarios modeled using a decision tree framework and tool.

— **Philadelphia Water Department Utility-wide Energy Plan, Philadelphia, Pennsylvania**: Task Leader for Triple Bottom Line Sustainability Assessment performed triple bottom line (economic, environmental, social/community) impact assessment of energy conservation measures identified as part of the strategic energy plan. Steve conducted benchmark analysis of energy consumption at each facility using the U.S. Environmental Protection Agency's Portfolio Manager tool. He identified opportunities for reducing energy consumption and operating expenses at three wastewater treatment facilities. Steve conducted preliminary screening and prioritization of energy conservation opportunities based on initial capital cost estimate, payback period, and impact on plant operations.

— **Upper Occoquan Service Authority Energy Performance Contract, Centreville, Virginia**: Wastewater Process Lead responsible for wastewater process analysis, identification, development, and economic evaluation of wastewater process-related energy conservation measures for inclusion in a portfolio of energy conservation measures under an energy performance contract.

— **Two Bridges Sewerage Authority Wastewater Treatment Plant Capital Improvement Master Plan, Lincoln Park, New Jersey**: Engineering Manager/Process Lead responsible for process analysis, alternatives evaluation, and conceptual plant design, and conceptual level cost estimates for the upgrade and expansion of the 7.5-million gallons per day Two Bridges Sewerage Authority wastewater treatment plant. The master plan addresses foreseeable needs and provides flexibility for future alterations to accommodate compliance with new environmental laws, regulations, and policies. Two Bridges Sewerage Authority's four driving needs were disinfection improvements to limit the formation of dichlorobromomethane, improved phosphorus removal to meet a more stringent total maximum daily load limit of less than 0.4 milligram per liter, treatment capacity increase to handle growth within the service area, and denitrification upgrades to prepare for an anticipated future nitrate limit of less than 10 milligrams per liter.

— **Mamaroneck Wastewater Treatment Plant Preliminary Design, New Rochelle, New York**: Lead Process Engineer responsible for process evaluation and preliminary process design for the upgrade of the 21 million gallon per day Mamaroneck Wastewater Treatment Plant. The project upgrade was to provide reliable nitrification and denitrification to meet the county's nitrogen waste load allocation. The approach for Mamaroneck Wastewater Treatment Plant was to phase-in improvements over several phases. Phase 1 improvements converted the existing aeration tanks to the integrated fixed film activated sludge biological nitrogen removal process. Phase 2 converted the integrated fixed-film activated sludge biological nitrogen removal system to a moving bed biofilm reactors biological nitrogen removal system and replace the secondary clarifiers with dissolved air flotation. Phase 3 added polishing filters to achieve total nitrogen of less than 4 milligrams per liter.

JAMES V. RYDQUIST, PE

Central Regional Manager, Water and Wastewater

Years with the firm

3

Years total

28

Professional qualifications

Professional Engineer: Ohio, 2003 (No. E-68537); Michigan, 2000 (No. 046880)

Construction Documents Technologist (CDT), Construction Specifications Institute, 2003

Professional memberships

American Water Works Association

AWWA - Water Condition Assessment Committee

Water Environment Federation

WEF – Industrial Wastewater Committee

National Association of Clean Water Agencies

NACWA – Pretreatment & Pollution Prevention Committee

CAREER SUMMARY

James Rydquist is WSP's national business line leader for Waste Water and manages projects associated with all facets of water, wastewater, stormwater engineering. He has extensive experience in the design and management of large multi-discipline projects involving water and/or wastewater treatment, sanitary sewer systems and water main improvement, combined sewer overflow reduction, sanitary sewer overflow elimination, and supervisory control and data acquisition. His responsibilities have included management, planning, conceptual analysis, design, and construction management. His expertise includes management of large projects involving many disciplines and teaming partners. He has also excelled in completing fast track projects on time with a limited amount of construction changes.

EDUCATION

B.S., Civil and Environmental Engineering, University of Michigan, Ann Arbor, Michigan — 1994

Experience

— Perry Street Diversion Pumping Station, Oakland County, Michigan (2013-2016): project manager for the ACEC award winning design of a diversion pumping station that diverts 30 percent of flow on an average basis from the Oakland County Interceptor to the newly acquired Pontiac Wastewater Treatment Plant. Flow diversion will alleviate hydraulic problems within the interceptor and also reduce costs incurred by treating the sewage at the Pontiac Treatment Plant verses sending all flow to the Detroit Water and Sewerage Department through the interceptor. Design utilized dry pit submersible pumps with a wet well level that "floats" off the interceptor to maintain minimum flows in the sewer while maintaining the average diversion.

— RTQ 54-inch PCCP Force Main Rehabilitation, Design Build, Miami, FL (2019-2020): Quality control review of a slipline rehabilitation project that includes 3,500 feet of 54-inch forcemain that is being slip-lined with new HDPE pipe. Construction is being completed in multiple phases with detailed construction sequencing to ensure flows are by passed or kept in service duing construction.

— Electrical and Instrumentation Design for THP Residual Treatment at the Pontiac WWTP, Water Resources Commissioner (WRC), Oakland County, Michigan (2015-2018): managed the electrical and instrumentation design of the new residual treatment improvements at the Pontiac Wastewater Treatment Facilities as part of a multiple consultant led team. The THP process will be one of only a few municipalities using the new innovative technology in the United States.

— Devona Sanitary Sewer Design, Devona, OH (2019-2020): Key concept review related to sewer design for a 400+ home community within hilly terrain. The client needed the best and most cost effective options for providing sanitary to homes mandated by the Ohio EPA.

— Downriver Wastewater Treatment Facility (DWTF) Clarifier Upgrades, Wyandotte, Michigan (2011-2014): manager during construction of improvements to the Wayne County DWTF clarifiers to improvement flow distribution between the individual units and improved the solids settling within each individual clarifier. During design clarifier modeling was completed to determine the best configuration of improvements and equipment. Completed construction allowed for improved treatment, higher treatment volume capabilities through the process and better distribution of flows.

— Milk River Priority 1B Improvements, Wayne County Environmental Services, Grosse Pt. Woods, Michigan (2015-2018): manager for a $36 million-dollar total rehabilitation of the 60-year-old CSO control facility. The design incorporated rehabilitation of 7 stormwater pumps with a total pumping capacity of over 1 billion gallons, retrofit of a new basin flushing system that revised an antiquated nozzle system into two separated basins with modern flushing gates and grit and dewatering pumps. Improvements also included repair of a 36-inch forcemain under the Milk River, upgrades to the aeration tanks, blowers, sampling, and disinfection systems. Improvements were made to the recirculation pump station that modified the influent screening and added chemical disinfection to the intake flow as a measure to control zebra mussels at the intake.

— Baby Creek Combined Sewer Overflow (CSO) Control Facility, Detroit Water and Sewerage Department (DWSD), Detroit, Michigan (2008): construction manager for post-construction period. Screens were not operating according to design perimeters. Worked with DWSD to determine the cause of screening failures during high rain events (flows over 2,100 gpm). Investigation included site inspection with structural, electrical, and process engineers to determine the probable cause of failure. In addition, worked with DWSD to find the cause of chemical feed distribution problems at the facility and worked hand-in-hand with the CSO maintenance staff to correct them. The problems were found to be the responsibility of the contractor and the deficiencies were corrected at no additional cost to the owner.

— Rouge Valley Priority 1B Improvements, Wayne County, Michigan (2015-2018): manager for the upgrades in disinfection and supervisory control and data acquisition (SCADA) improvements at multiple retention treatment facilities within Wayne County. The project upgraded controls of disinfection of CSO flows prior to discharge and included a modernization of instrumentation and control so that facilities could be operated remotely from the central wastewater facility. Telemetry upgrades were also made to over 36 flow metering sites throughout the collection system.

— Point Place Sanitary Sewer Overflow (SSO) Elimination, Phase II, Toledo, Ohio (2002–2005): project manager for the design and construction of over 26,000 feet of force mains and sewers including two large pump stations transferring up to 23.1 MG of wet weather flow to the City's treatment plant. Project was completed on a tight schedule to meet legal requirements set by the City's Consent Decree with the U.S. Environmental Protection Agency. A total of five projects were designed in less then four months. Over three years, they were constructed with a net savings of more than $240,000.

— Booster Pump Station Condition and Needs Assessment, Great Lakes Water Authority (GLWA), Detroit, Michigan (2017-2018): client manager for the condition assessment of the GLWA Booster Pumping Facilities with associated determination of needs and capital planning for each of the facilities. The pump stations include all GLWA pressure related needs for a distribution system that provides over a billion gallons of peak water usage to its customers. Due to a reduction in water demands in the area these facilities were found to have pumping limitations outside of their AOR and POR ranges for minimum flows. Recommendations and improvements were defined to bring these facilities in line with current and future demands as well as costing for overall upgrades to each of the facilities for the next 20 years.

— Wastewater Treatment Asset Sustainment Program, Major Automotive Manufacturer, Multiple Locations (2008): site manager for several plant locations, including Ypsilanti, Michigan; Beford, Indiana; and Toledo, Ohio. Projects included wastewater treatment analysis, stormwater treatment improvements, chemical feed improvements, and instrumentation improvements. Projects were done as a "Guaranteed Maximum Price" Design/Build while working with contractors in some locations and the United Auto Works trades in others.

— Industrial Waste Reduction and Minimization Plan, City of Toledo, Toledo, Ohio (2006-2008): overall project manager and field inspection manager that provided inspection of 90 industries throughout the City to determine influence on the sewer system during wet weather. Assisted the City with a comprehensive Industrial Pretreatment Plan (IPP) and provided a detailed Industrial Waste Reduction and Minimization Plan for the City's use moving forward. Report included recommendations to further reduce discharges of possible contaminates during events that would reach the combined sewer overflows.

— Bay View Water Reclamation Plant, Bay View Water Treatment Plant, City of Toledo, Toledo, Ohio (2002-2005): manager for the engineering during the construction phase of improvements to the Bay View Pumping Station, which is the primary influent pump station to the treatment plant with a firm capacity of approximately 193 MGD. Work included coordination of construction issues with the operations staff, review of payment applications, construction progress meetings, and oversight of contractual negotiations with the contractor.

- Toledo Waterways Initiative, Wet Weather Facilities Design, City of Toledo, Ohio (2003-2007): project manager for design and construction of a 30-MG equalization basin as part of a multi-firm design team that constructed a 200-MGD wet weather treatment facility. Entire project included a new grit facility, ballasted flocculation, and a 30-MG equalization basin. Equalization basin was designed with a new vacuum flushing technology that is one of the largest systems within the United States.
- Green Infrastructure Program Management, Detroit Water and Sewerage Department (2013 – 2018): Manager for the 15 million dollar upper rouge green infrastructure program for the City of Detroit Water and Sewerage Department. The project utilized green infrastructure planning, design and construction to reduce the volume of stormwater into the City's sewer system for the purposes of reducing flows to the water reclaimation facility and improve local drainage and flooding.
- Lake Huron Water Treatment Plant Mechanical Upgrades, Great Lakes Water Authority (GLWA), Fort Gratiot, Michigan (2016-2018): client manager for heating, ventilation, and air conditioning (HVAC) improvements for the 400 MGD treatment capacity Lake Huron Water Treatment Plant. The project utilized computer heat and cooling modeling to determine the appropriate improvements necessary for replacement of aging equipment. In addition, architectural and structural improvements were combined with ventilation and heating improvements to isolate the filter room gallery air from more sensitive equipment rooms. The project will modernize the plant's HVAC while also making the system more operator and maintenance friendly for the Lake Huron Staff.
- Southwest Water Treatment Plant Electronic Valve Actuator Replacement, Great Lakes Water Authority (GLWA), Allen Park, Michigan (2015-2018): project manager for the assessment of potential technology upgrades for replacement of the oil-hydraulic valve actuator system for the plants process valves. Large diameter butterfly and modulated cone valves were operated by a oil-hydraulic system that had various leaks throughout the facility. Plant operations wanted to review new technologies, including electric operation of these valves for replacement. Electric motor actuators were selected and designed for replacement while the existing system was decommissioned. Sizing of the electric actuators required review of emergency closure times and the need for ancillary backup power for emergency closure during power outages.
- Waterworks Park Water Treatment Plant Disinfection Upgrades, Great Lakes Water Authority (GLWA), Detroit, Michigan (2016-2018): manager for improvements and replacement of the ventilation and air scrubber design as well as the onsite resident project representation for the construction of the complete upgrades to the chlorine gas disinfection system at the 240 MGD Waterworks Park Treatment Plant. As part of this project, engineering staff were required to review 10-State Standards for air changes within the defined space and due to the size and complexity of the disinfection complex GLWA standards were developed to ensure operator safety with reduced long term utility expense.
- Water Master Plan, Detroit Water and Sewerage Department, Detroit, Michigan (2013-2015): manager for the Capital Improvement assessments at each of the Water Department's five water treatment plants as part of a large multi-consultant team of engineering firms. For the master planning project, CIP planning was needed for both the short-term (five-year plan) and for the long-term over the next 20 years at each facility. Total treatment capacity of the five plants within the Tetra Tech report were designed to treat up to 1.6 billion gallons of water. The estimate future capacity of the plants is 1.0 billion gallons with aging infrastructure needs at each facility. Project deliverable also included an analysis of the costs and impacts to the reduction of plant capacity and the possible elimination of a water plant within a water system that has experienced a significant reduction in demand.
- Southwest Water Treatment Plant Residuals Facility, Detroit Water and Sewerage Department (DWSD), Detroit, Michigan (2007-2013): project manager for the design and construction of a new residuals treatment facility for the plant as part of the DWSD CS-1305 contract with the water utility. The project included design of sludge flocculation, settling, and sludge thickening equipment with a new residuals facility. Design was under a tight schedule and completed in November of 2008 with construction costs of approximately $50 million. James also acted as Construction Manager during construction and assisted DWSD in construction oversight. Construction completed in December 2013.

NEIL CALLAHAN, ENV SP

Co-Service Area Manager, Water & Energy Advisory Services

Years with the firm

22

Years of experience

44

Education

M.S., Environmental Science, Water Resources; B.S., Environmental Science, Water Resources

Professional registrations

Envision Sustainability Professional (ENV SP)

Professional affiliations

American Membrane Technology Association (AMTA)

American Water Works Association (AWWA)

WateReuse Association

Areas of practice

Water and Wastewater Advisory Services

Water and Wastewater Utility Evaluations

Capital Program Development

CAREER SUMMARY

Neil has 44 years' experience in both the public and private sector water and wastewater utility industry in a variety of senior management roles. He has held senior positions in consulting firms for over two decades. Neil Callahan currently is co-service area manager for Water and Energy Advisory Services within WSP's Advisory Services group. At WSP, Neil specializes in aiding water and wastewater clients in the areas of utility management consulting, Owner Representative services for Alternative Project Delivery Methods (APD) or Public-Private Partnerships (PPP) and preparing Independent Engineering Reports.

Prior to joining WSP, he was the Water and Waste Resources Division Manager and then the Water Advisory Services leader for Louis Berger US, which provided water/wastewater utility management consulting, owner's advisory services, independent engineering and program management services. Prior to Louis Berger US, Mr. Callahan was the Water Division Manager for Leidos Engineering Inc. and SAIC. Mr. Callahan had overall responsibility for the business performance of the Water Division that SAIC had purchased R. W. Beck, Inc. in 2009

Mr. Callahan has been a lead advisor to over 40 municipal agencies and financial institutions throughout North America on project development, project structuring, procurement methods, contract negotiations and development, and construction contract administration and monitoring for projects with values ranging from $10 million to $1 billion. He is a frequently speaker on advisory services topics at national conferences, and professional workshops, and was the author of a chapter in the AWWA/DBIA "Design Build for Water and Wastewater Projects" guidance manual.

Mr. Callahan, prior to working as a management consultant, spent 22 years in the executive management and operations of both public and private water and wastewater utilities. In his last O&M position, he was the Executive Vice President of a U.S. contract operations company. He was a member of that company's Executive Management Committee and was responsible for all of the operating projects of the company serving 30-40 utility owners. Mr. Callahan was responsible for developing and implementing operational budgets, oversight of all of the company's technical performance and risk management programs and managing project O&M and regulatory compliance performance. He developed and implemented a training programs for O&M personnel in order to effectively manage meeting the company's growth target of 30 percent year over year increased operating revenues. Mr. Callahan also oversaw, another company division, the operation of a state certified commercial water and wastewater laboratory and field sampling services group.

RELEVANT PROJECT EXPERIENCE

Owner's Advisor – Qualified Management Contract or Concession for a Municipal Water and Wastewater Utility, Rialto, CA Senior Project Advisor. Mr. Callahan led the development of a procurement solicitation for either a Qualified Management (Contract Operations) Contract or a Concession Agreement for the City of Rialto's existing water and wastewater utilities. The City selected to pursue a Concession and retained WSP to conduct the negotiations. Responsibilities included evaluation of the technical and financial components of Project, developing the Procurement Strategy and RFPs, conducted a technical and financial review of the submitted Proposals, negotiation of Concession Agreement, and presentation of findings and results in public meetings.

The Concession Agreement facilitated the Concessionaire in securing over $170 million of private financing to implement the defined capital improvement program and provide all required contract operation services to holistically manage and operate the utilities and perform all customer services including billing.

- **Procurement Advisory Services Carlsbad Desalination Project, San Diego County Water Authority, San Diego, California:** Project Manager. Mr. Callahan served as the Project Manager for the feasibility evaluation for the $1B Carlsbad 50 MGD seawater reverse osmosis desalination plant Public-Private-Partnership. The project involved evaluating the project developer's proposed contracts, evaluating Public-Private-Partnership project risks, project costs and power usage and tariff concerns. Neil was the lead business advisor to the San Diego County Water Authority on procurement methods, technical and financial feasibility and modeling, risk assessment, business case development, decision support and vendor negotiations. He oversaw the development of a financial model with the ability to support a project business valuation that evaluated thirteen difference business cases for the project. Mr. Callahan also led a task to perform technical due diligence on the developer's EPC and technology provider's contracts and pricing and to provide negations support for SDCWA's development of a Water Purchase Agreement (WPA) with a private developer. Mr. Callahan team subsequently developed or negotiated the performance terms and conditions or specifications of the WPA on behalf of the SDCWA. Mr. Callahan continues to provide contract administration and engineering support to SDCWA on an as-needed basis.

  Owner's Advisor and Program Manager – Regional Surface Water Treatment Plant Project, Tampa Bay Water, Florida Project Manager. Mr. Callahan was the owner's advisor and program manager for the Design Build Operate (DBO) project delivery for a 66 mgd surface water treatment plant. This project included the development of a national DBO contractor procurement process, including all procedures and schedule; development of DBO contract technical and business terms and conditions and procurement documents; development of risk allocation strategy, preparation of a Risk Matrix; assistance with community relations; development and assistance with the contractor pre-qualification, evaluation of qualifications and proposals for DBO; and assistance with the negotiations of the DBO procurement. Tampa Bay Water estimated it saved $85 million dollars by using an alternative project delivery method for this project.

- **Western Carolina Regional Sewer Authority (WCRSA) Piedmont WWTP Alternative Delivery Analysis. Piedmont, South Carolina:** Mr. Callahan lead a team that developed an alternative delivery workshop and then subsequently assisted WCRSA with the development of the procurement documents for selecting a CMAR contractor. WSP USA consulted on the CMAR structure and the roles and responsibilities of the parties, the CMAR qualifications submittal requirements, the CMAR preconstruction scope of work, the CMAR construction requirements, the proposal pricing and bidding requirements and the proposal forms for the Final RFP.

- **Procurement Advisor, Replacement of Contract Operator for an Existing Wastewater Treatment System, City of Danville/Virginia** Project Manager. Mr. Callahan led the Contract Operations procurement activities to assist the City to qualify and select a replacement contractor to operate the City's Northside Wastewater Treatment plant and the collection system. The City had determined it was in its best interest to re-compete its existing longstanding contract for the operations and maintenance of the facilities. Responsibilities included developing the Scope of Work, assisting with preparation of the RFP, assisting with the development of the Contract Terms, and proposal evaluation. The City subsequently awarded the O&M Contract to the selected contractor.

- **Owner's Advisor and Program Manager – Hialeah Brackish RO Desalination Project, Hialeah, Florida** Mr. Callahan was the Project Principle for the City of Hialeah's Brackish RO Desalination Project. The project consisted of the project oversight, planning and reporting, scheduling, and the development of a Request for Proposal for a DBO contractor. The work also included the development of a Preliminary Design Package, permitting, pilot testing, geohydralogic evaluation and construction management for a

brackish wellfield, a 17 mgd brackish RO desalination plant and concentrate disposal wells. Mr. Callahan's team provided Program Management services, project planning, design document development, permitting assistance, procurement advisory services (develops RFEI, RFQ, RFP, Specifications for Service Contract), contract development assistance, contract negotiations, and construction management services.

- **Expert Technical and Financial Evaluation of the Performance a Multi-County Water Utility, Assured Guaranty Corp., Iowa:** Project Manager. Mr. Callahan serves as Project Manager for performing the performance evaluations and facility Inspections for Chapman and Cutler LLP, on behalf of Assured Guaranty Corp. (the bond insurer) to review and evaluate the management, administrative and operations of Xenia (a ten county water utility) with the objective of assessing if Xenia has appropriate management, organizational and operational practices and procedures in place to assure that is performing efficiently and consistently with good water industry practices. The principal objective of the work was to evaluate if there were opportunities to pursue additional cost savings and or enhanced revenue generation and collection.
- **Utility Operations and Management Review, Lower Colorado River Authority (LCRA), Texas:** O&M Review Lead Mr. Callahan's team was engaged by the Lower Colorado River Authority (LCRA) to provide an independent management and organizational assessment of LCRA's Water and Wastewater Utility Services operations and customer services department. The department included approximately 30 sites.
- **Water System Evaluation/Acquisition, South Central Connecticut Water Authority/Connecticut, Technical Expert.** Mr. Callahan's team reviewed the physical and financial condition of the New Haven Water Company system as a partial basis for its sale to the South Central Connecticut Regional Water Authority. The water company originally incorporated in 1849 and expanded its service area during the next 70 years through acquisition of or consolidation with adjacent water companies. At the time of the study, the company served and/or owned land in 17 towns and provided service to a population of approximately 300,000 in and around New Haven. The scope of the evaluation included the technical investigation and evaluation of all facilities.

PREVIOUS EXPERIENCE

Before joining WSP, Mr. Callahan's experience includes:

- **U.S. Water, Somerville, New Jersey:** Executive Vice President, Operations. Mr. Callahan was a member of the company's Executive Management Committee and managed all of the operating units of the company. He was responsible for the management of contracts for 80 treatment systems.
- **U.S. Water:** Vice President - General Manager. Mr. Callahan's accomplishments included: a revised operational budget process, reducing variances and improving cash flow management; development of an activity-based cost accounting system to facilitate accurate and uniform measurement of project and company-wide performance.
- **CFM Environmental Services:** Director. Prior to United Utility's purchase of US Water, the company name was CFM Environmental Services, a wastewater consulting engineering, contract operations and commercial laboratory firm. Mr. Callahan successfully directed projects involving water/wastewater permitting, planning, regulatory compliance, ACO negotiations, treatment plant process design, start-up and development of compliance assurance programs.

  Environmental Disposal Corp.: Wastewater Utility Development, President. Mr. Callahan was responsible for the green-field development and the operations of a world-class publicly regulated, Investor-Owned wastewater utility.

Thomas Payne, PE

NEW ENGLAND DISTRICT WASTEWATER LEAD

Mr. Payne has more than 20 years of experience in civil and environmental engineering managing projects from planning, through design and construction. Mr. Payne serves as a company-wide subject matter expert and technical advisor on water and wastewater projects. In this role, his responsibilities include advising on projects from scoping through final design, conducting QC and constructability reviews, and providing construction phase support. He is also actively engaged as a lead design engineer and project manager on a variety of civil and environmental engineering projects across the United States and abroad. Project experience includes, water, wastewater, and stormwater management, and facility planning; research and design for sanitary sewer, storm sewer, and water infrastructure and treatment plant; enhanced site and utility assessments; environmental compliance; asset management and condition assessment; O&M and site safety improvements; preparation and review of construction documents; construction oversight; project organization and management. Mr. Payne also participated on the task force to update the Water Environment Federation (WEF) Manual of Practice No. FD-6, Existing Sewer Evaluation and Rehabilitation and is currently appointed to the WEF Water Reuse and Industrial Wastewater Committees.

COMPANY
WSP USA Inc.

EDUCATION
BS and MS, Civil and Environmental Engineering, Tufts University, 1995 and 1996

REGISTRATIONS
Professional Engineer: Rhode Island (7540); Hawaii (13203); Maryland (46144); South Dakota (14036); Nevada (25932); Connecticut (0034523)

YEARS OF EXPERIENCE
26 years

YEARS WITH COMPANY
25 years

RELEVANT EXPERIENCE

DISNEY CRUISE LINES, ELEUTHERA ISLAND, COMMONWEALTH OF THE BAHAMAS. QA/QC and technical advisor for the wastewater treatment system evaluation and design of the wastewater treatment and water treatment facilities for a new dockside recreational facility that will accommodate up to 2,400 daytime guests per day. WSP's design included a 110,000 gallon per day (gpd) Membrane Bioreactor (MBR) plant to treat domestic and commercial wastewaters from the facility, and a 165,000 gpd Reverse Osmosis Desalination plant for the provision of potable water. Effluent quality for the MBR plant is anticipated to be better than 10 mg/l for 5-day biochemical oxygen demand and total suspended solids and following ultraviolet disinfection will be stored as reuse water for landscape irrigation and vehicle washing. Facility is under construction with an expected completion date of late 2023.

HINES ENERGY COMPLEX WASTEWATER TREATMENT PLANT REPLACEMENT, BARTOW, FL. Project manager for design evaluation and record drawings for the installation of a 10,000 gallon per day steel package plant to treat domestic sewage. WSP evaluated the treatment plant design to ensure compliance with categorical discharge limits, and provided post-construction installation inspection and record drawings for the client as well as Florida state regulatory authorities. During operation the extended aeration plant achieved the effluent quality as calculated, allowing beneficial reuse as power plant cooling water.

RHODE ISLAND DEPARTMENT OF ADMINISTRATION, ELEANOR SLATER STATE HOSPITAL, ZAMBARANO UNIT, BURRIVILLE, RI. QA/QC manager for wastewater treatment plant improvements that included new course-bubble mixing/ aeration, new aeration blowers, tertiary treatment by UF-RO train, in-pipe UV disinfection, chemical storage and feed pumps, structural and electrical improvements, and new process control and instrumentation. Project included facility inspection and assessment, product research, budgetary cost estimates, design calculations, meetings with state regulators, and preparation of contract drawings and specifications.

WELLINGTON AVENUE CSO TREATMENT FACILITY UPGRADE, CITY OF NEWPORT, NEWPORT, RI. Technical Advisor and Quality Control Reviewer responsible for project specifications and plans for the site, civil, architectural and electrical

improvements of an existing combined sewer overflow pump station and treatment facility located on the shore of the Narragansett Bay. Upgraded facility features includes a sanitary pumping system replacement, a 16-inch diameter force main, flood protection measures, and other miscellaneous site civil and architectural improvements. The project required coordination with multiple engineering disciplines as electrical, HVAC, instrumentation, and structural improvements were necessary. The project was completed ahead of schedule and under budget. It also received USEPA recognition for excellence and innovation in clean water infrastructure.

LOWER BRULE LAGOON SYSTEM WASTEWATER MANAGEMENT STUDY, TOWN OF LOWER BRULE, SD. Principal engineer responsible for evaluating the wastewater treatment needs of the community of Lower Brule within the Lower Brule Sioux reservation and recommending alternate treatment options. The existing lagoon system has three cells in series with a combined area of 32.5 acres and treats an average daily flow (ADF) of approximately 140,000 gallons per day. The lagoon system is currently meeting categorical discharge standards. The lagoon system is located on the bank of Lake Sharpe, a reservoir behind big bend dam on the Missouri River. One cell is within 150 feet of the bank, which USGS has determined is eroded at a rate of 27 feet per year, and in danger of being breached within 10 years. This would result in a potentially catastrophic release millions of gallons of partially untreated waste into the reservoir. The options for wastewater treatment under consideration include one or more of the following: a replacement wastewater treatment plant constructed in an alternate location; decentralized wastewater treatment using packaged wastewater treatment plants with on-site disposal where appropriate; downsizing the existing lagoon system to remove the third cell from the treatment train; and capturing the reject water from the water treatment plant, which accounts for one third of the total ADF, and treating that separately at an off-site location.

COMMUNITY WASTEWATER LAGOON REHABILITATION, OGLALA SIOUX LAKOTA HOUSING, RED SHIRT, SD. Principal engineer responsible for evaluation of the existing sanitary lagoon system and preparation of the preliminary engineering report in accordance with USDA bulletin 1780-2. The existing single-cell lagoon system has a footprint of approximately one-acre and an average daily flow of around 8,000 gallons per day. The lagoon was found to be extreme in disrepair and the north wall had failed resulting in risks to human health and the environment. Alternate technologies were explored for provision of adequate wastewater treatment for the community. It was recommended that a fixed media trickling filter would provide superior treatment and eliminate the nuisance issues, such as odor and insects, as well as potential hazards associated with the lagoon system. The project also included development of a presentation of the technology for the community, USEPA, Indian Health Services and other stakeholders.

RHODE ISLAND DEPARTMENT OF CORRECTIONS, WASTEWATER GREASE AND SOLIDS LOADING REDUCTION STUDY, CRANSTON, RI. Project engineer responsible for conducting grease removal and solids reduction studies for eight correctional institutions for the Rhode Island Department of Corrections (RIDOC) and one hospital for the Department of Mental Health, Retardation and Hospitals (MHRH), all located within the John O. Pastore Center in Cranston, Rhode Island. These studies involved reviewing previous reports, conducting interviews with maintenance personnel, monitoring wastewater flow, determination of grease and solids loading rates and evaluation of various grease and solids removal technologies. Responsible for developing and evaluating feasible treatment alternatives and estimating construction costs. These alternatives were ranked based on their environmental compliance, capital costs, operation and maintenance requirements and costs, as well as BOD, TSS and/or grease removal efficiencies. Also responsible for conducting grease interceptor sizing.

DEPARTMENT OF PUBLIC WORKS, LEBANON, RATE STRUCTURE ANALYSIS, LEBANON, NH. Project engineer responsible for performing rate structure analyses for both the potable water and sanitary sewer fees for the City of Lebanon, New Hampshire. Responsibilities included determination of the revenue requirements for the water and wastewater systems through evaluation of operating expenditures and net income. Also considered the debt service requirements for existing and future projects necessary to expand the systems to accommodate planned future growth, as well as to ensure regulatory compliance. Project goals were to enable utilities to become self-sustaining, provide for adequate reserves and to develop an equitable rate structure for all users with a timetable for implementation over a five-year period. Other responsibilities included formal presentation of the findings and recommendations at public hearings and City Council meetings and technical support during subsequent meetings.

DEPARTMENT OF PUBLIC WORKS, PETERBOROUGH, WASTEWATER TREATMENT PLANT EVALUATION, PETERBOROUGH, NH. Project manager responsible for evaluating proposed treatment technologies associated with a new wastewater treatment plant design for the Town of Peterborough, New Hampshire and recommending which treatment process would

best suit the needs of the Town. Due to population growth and more stringent discharge limitations imposed by the Environmental Protection Agency, the Town needed to upgrade the treatment process of the existing plant. The existing lagoon system was not capable of meeting the more stringent nutrient limitations stated in the National Pollution Discharge Elimination System (NPDES) permit. Responsibilities included meeting with product representatives, interviewing treatment plant operators and evaluating the proposed treatment processes to determine which processes would meet the NPDES permit requirements through kinetic modeling. Also responsible for development of construction and equipment cost estimates for comparison of the technologies and to verify estimates provided to the Town by others.

CHESHIRE COUNTY FACILITY, WASTEWATER TREATMENT PLANT, WESTMORELAND, NEW HAMPSHIRE. QA/QC engineer for the performance of a "wastewater system improvements alternative evaluation" and preparation of report for the county facility, including treatment and source alternatives analysis; conceptual design and alternatives costs comparisons (present and future, and life cycle costs); report preparation and public presentation; and NHDES state wastewater revolving fund application. System includes: headworks (with auger), 2 septage lagoons (3 cells, total), chemical addition, ultra-violet light disinfection, and surface discharge to the Connecticut River.

USACE BALTIMORE DISTRICT, WATER AND WASTEWATER INFRASTRUCTURE EVALUATION, FORT MEADE, MARYLAND. Project engineer/manager responsible for conducting evaluations of the water and wastewater infrastructure and treatment plants to determine system wide capacities and needs to support agency relocations as part of the department of defense's BRAC 2005. Performed evaluations of both water and wastewater treatment plants, water distribution and storage, and wastewater collection system and pump stations, as well as reviewed permit language to determine limitations for expansion. Tasks included physical inspection of plants and pump stations, capacity analysis of sanitary sewers, hydraulic evaluation of water distribution system and interviewing plant operators and maintenance personnel. Prepared alternative evaluation for actions required to correct deficiencies complete with costs estimates. Presented findings at 3-day stakeholders meeting that included the U.S. Army Corps of Engineer, National Security Agency, Defense Information Systems Agency, and Department of Defense, as well as the commanding officer and directorate of public works at Fort Meade with support staff.

DEPARTMENT OF PUBLIC WORKS, TOWN OF MIDDLETOWN, WEST SIDE PUMP STATION CONSOLIDATION STUDY, MIDDLETOWN, RI. Project manager/principal engineer responsible for developing and evaluating consolidation alternatives with the goals of reducing the hydraulic burden on the Town's main pump station as well as reducing the impacts on the Town's resources and personnel. Overall objectives included development and analysis of alternatives to combine sewersheds using gravity connector sewers and reduce the number of pump stations while redirecting wastewater flow from the Bailey Brook interceptor and the Wave Avenue pump station. Responsibilities included physical assessment of existing pump stations, alternative development and analysis, economic analysis of operation and maintenance costs, site selection for new pump station, pump and wet-weather storage facility sizing, preliminary design of gravity sewers and force mains, determination of permitting requirements, and preparing a cost-benefit analysis. Also responsible for developing a decision matrix and working with the Town to determine the preferred alternative, report preparation and presentation of findings at public meetings of the Road and Utility Committee and Town Council.

NATIONAL PARK SERVICE, LINCOLN MEMORIAL REFLECTING POOL (LMRP) WATER TREATMENT COARSE FILTER UPGRADE, WASHINGTON, DISTRICT OF COLUMBIA. Design manager and principal engineer responsible for designing upgrade of the coarse filter assembly at the LMRP water treatment facility. Modifications made during construction and alternate operating practices increased the solids loading to the water treatment facility resulting in frequent blinding of the coarse filter screen requiring continual hands-on maintenance. Responsibilities included coordination with the park service and equipment manufacturer, preparation of contract drawings and specification associated with the replacement coarse filter assembly, and preparation of the construction cost estimate.

DOJ BOP, WATER SOFTENER SYSTEM, PEKIN, IL. Project engineer responsible for design of an ion exchange water softening system to treat approximately 400,000 gpd at a correctional facility in Pekin, Illinois. The correctional facility obtains water from shallow wells in a contained aquifer. The water at the facility is therefore very hard and has elevated alkalinity levels. Responsibilities included development of system layout and quantification of site work involved for two alternate locations. Also responsible for the preparation of the preliminary site drawings to be used as construction documents. In addition, prepared the construction cost estimates for the two alternatives.

U.S. DEPARTMENT OF STATE (DOS), U.S. EMBASSY, BELGRADE, SERBIA. Project engineer responsible for research and design of the stormwater retention pond and pump station, and the wastewater pump station and wastewater treatment plant associated with the development of a new United States Embassy located in Belgrade, Serbia. Site development restrictions and off-site infrastructure limitations mandated the storage of stormwater runoff up to the 100-year storm event with pumping to the nearest municipal conveyance system. Likewise, the existing municipal infrastructure was unable to meet the wastewater treatment requirements associated with Department of State and Army Corps of Engineers; therefore, an on-site wastewater treatment plant was required prior to discharging into the municipal collection system.

GLENN BOTTOMLEY, PE

Project Manager

Years with the firm

34

Years total

36

Professional registrations

Professional Engineer: Virginia (0402023299)

CAREER SUMMARY

Glenn Bottomley is a senior supervising engineer who has managed a diverse range of infrastructure construction projects with an aggregate construction value totaling over $200 million. His experience includes preparing quality bidding documents complying with the latest Virginia Beach standards and specifications that result in positive outcomes in the final cost of construction projects and meeting schedules. Glenn has worked across stormwater and wastewater for his entire career.

Glenn has managed a very diverse range of infrastructure projects with an aggregate construction value totaling over $250 million. He has managed projects consisting of sanitary pump stations and sewer conveyance, water conveyance, stormwater pump stations and ocean outfalls, flood protection and resilient infrastructure, stormwater management, large highways, urban roadways, neighborhood revitalization, drainage improvements, bridge replacement projects, transit facilities, and port facility improvements.

EDUCATION

BS, Civil Engineering, Old Dominion University 1986

PROFESSIONAL MEMBERSHIPS

American Society of Civil Engineers

PROFESSIONAL EXPERIENCE

North Beach Stormwater, Pump Station and Ocean Outfall | City of Virginia Beach | Virginia Beach, VA

Project manager for the planning, design, construction documents, and contract administration for this project consisting of: large diameter collection system, 60,000 gallon-per-minute submersible stormwater pump station, 2,000 linear feet of 48-inch lined PCCP subaqueous force main ocean outfall, microtunnel evaluation, EPA SWMM computer simulation model, Watershed Evaluation Study, VMRC environmental permitting, public utility relocations, architectural design for pump station generator building and landscaping consistent with the oceanfront resort community environment, phased

construction and detailed estimates to meet budgetary constraints, and public participation with civic leagues and residents.

HRSD System Metering, Phase IV | Hampton Roads Sanitation District | Hampton Roads, VA

Project manager for the planning, design, preparation of bidding documents, and construction services for the installation of 53 flow meters and pressure sensors on interceptor force mains across seven jurisdictions for the Hampton Roads Sanitation District (HRSD) for their Master Meter Program. The WSP Team successfully met the aggressive schedule of the EPA-driven consent order requirements that 16 municipalities signed on to. The meter installations provide data for the Regional Wet Weather Management Plan and information on the integrity of the HRSD system and for calibration of the hydraulic model. The southside contract awarded was one of the most challenging contracts that involved working with multiple municipalities and required the design of large diameter line stop and bypasses and addressing the impacts of construction in congested urban principal arterials.

Shore Drive Drainage Improvements and HRSD Relocation with Line Stop & Bypass | Virginia Beach Public Works Stormwater and Roads Divisions and HRSD | Virginia Beach, VA

Project manager for the planning, design and preparation of construction documents for a 16-inch HRSD line stop and bypass that was successfully constructed in late 2020. The WSP design coordinated the requirements of Virginia Beach Public Works Stormwater, VB Roads Divisions and HRSD. WSP met the aggressive schedule and coordinated the construction of a future force main connection and the future HRSD/City connection point.

South Battlefield Boulevard Sewer Conversion Project | Chesapeake Public Utilities | Chesapeake, VA

Project manager for providing planning, design. construction documents and construction inspection and administration services for converting 280 acres of fully developed properties from septic tank service to City sanitary sewer service. The project involved 14,500 linear feet of gravity sewer, 29 jack-and-bore crossings, submersible pump station, 1,000 linear feet of 16-inch interceptor HRSD force main extension with a pile supported aerial creek crossing, Health Department approval, and property owner coordination.

Midtown Tunnel (MTT) 36”-inch Raw Water Line Horizontal Directional Drill | SKW Constructors | Norfolk, VA

Technical advisor for 4,500 foot, 220-foot deep, crossing under the river by horizontal directional drill (HDD) pulled back in a single string. The 36-inch, 0.625 thick, welded steel pipe (ASTM A53) was coated inside and out with a fusion bonded epoxy with the outer wall receiving an additional abrasion resistant overlay. Corrosion protection was provided by an impressed current cathodic protection system. Connection to the existing system was accomplished with 1,200 LF and 1,500 LF of 36-inch ductile iron pipe on the Portsmouth and Norfolk sides of the river (respectively).

Midtown Tunnel (MTT) 42”-inch HRSD Force Main Relocation PER and Protection Evaluation | SKW Constructors | Norfolk, VA

Technical advisor for the PER preparation for relocation of HRSD FM under the Elizabeth River where all sewage for Portsmouth, ultimately discharges through this line. The line cannot be shut down, nor the flows re-rerouted. Ultimately, the existing HRSD force was protected during construction.

WALTER MAHONEY

Years with WSP

14

Total Years of Experience

30

Education

Bachelor of Science

Professional Registrations

Grade 6 Municipal and Industrial Wastewater Treatment Plant Operator (MA)

Certified Collection system Operator (MA)

Certified Wastewater Laboratory Analyst (MA)

OSHA 40 Hour Hazardous Waste Operators Health and Safety Training

Professional Affiliations

Water Environment Federation

New England Water Environment Association

Massachusetts Water Pollution Control Association

Career Summary

Mr. Mahoney has experience in the technical and regulatory aspects wastewater infrastructure, including wastewater treatment plant and collection system design, construction, and operation and maintenance. Mr. Mahoney's design background allows him to fully understand all technical aspects of major construction and rehabilitation projects. His background includes plant design, operations, and inspection, as well as operations staff training, preparation of O&M manuals, wastewater treatment system analysis, design and implementation of pilot-scale treatment studies, and industrial process water recovery and reuse. Mr. Mahoney effectively coordinates the O&M of wastewater collection and treatment plant systems, drawing upon extensive experience in the design, installation, and maintenance of electrical, mechanical, and instrumentation systems. Additional recent experience includes: pump station design, water storage and distribution design, construction inspection, preparation of O&M manuals, emergency management planning, and Resident Engineer. Recent relevant experience includes design on on-call contracts including the Rhode Island Department of Environmental Management, Narragansett Bay Commission, National Park Service, and U.S. Army Corp of Engineers. He is a licensed municipal and industrial wastewater treatment plant operator.

Professional Experience

Disney Cruise Lines, Eleuthera Island, Commonwealth of the Bahamas: Design lead for the installation of a 110,000 gallon per day Membrane Bioreactor (MBR) plant for the treatment of domestic and commercial wastewaters from a new recreational facility. This facility will accommodate up to 2,400 daytime guests. WSP's design included foundation work, yard piping, electrical, and odor control system. Effluent quality will be better than 10 mg/l for 5-day biochemical oxygen demand and total suspended solids, and following ultraviolet disinfection will be stored as reuse water for landscape irrigation and vehicle washing. Facility is under construction with an expected completion date of late 2023.

Hines Energy Complex Wastewater Treatment Plant Replacement, Bartow, Florida: Process engineer for design evaluation and record drawings for the installation of a 10,000 gallon per day steel package plant to treat domestic sewage. WSP evaluated the treatment plant design to ensure compliance with categorical discharge limits, and provided post-construction installation inspection and record drawings for the client as well as Florida state regulatory authorities. During operation the extended aeration plant achieved the effluent quality as calculated, allowing beneficial reuse as power plant cooling water.

Rhode Island Department of Administration, Eleanor Slater State Hospital, Zambarano Unit, Burriville: Process engineer for Wastewater characterization and investigation of sources of copper, zinc, and total phosphorus in wastewater, with subsequent design of improvements. Treatability study included evaluation of physical-chemical separation methods including coagulation in combination with primary settling, secondary settling, membrane bioreactor (MBR), MBR- reverse osmosis (RO), tertiary filtration by ultrafiltration (UF), and tertiary filtration by UF and RO. Findings of study led to design of improvements including course-bubble mixing/aeration, new aeration blowers, tertiary treatment by UF-RO train, in-pipe UV disinfection, chemical storage and feed pumps, structural and electrical improvements, and new process control and instrumentation. Project included facility inspection and assessment, product research, budgetary cost estimates, design calculations, meetings with State regulators, and preparation of contract drawings and specifications.

Lower Brule Sioux Tribe, Lower Brule, South Dakota: Project engineer responsible for preliminary engineering report and 30% design for 0.1 MGD extended aeration wastewater treatment plant including raw wastewater pumping, flow equalization, and disinfection to replace failing lagoon treatment system for a rural community of 1,400 persons. Project included facility inspection and assessment, product research, budgetary cost estimates, design calculations, meetings with Federal and Tribal officials, and preparation of drawings and specifications.

U.S. Army Corps of Engineers (USACE), Babil Master Water and Sewer Plan, Babil, Iraq: Wastewater engineer with the project team preparing the $3.5 million Water and Sewer Master Plan for Babil Provence, Iraq. Responsibilities include on-site evaluation of wastewater treatment facilities, gravity sewers, and sanitary sewer pump stations with the goal of prioritizing maintenance efforts and identifying and protecting assets critical to maintaining services to the public. Additional responsibilities included recommending treatment process modifications with the goal of increasing hydraulic capacity and meeting revised Iraqi categorical discharge standards. Additional responsibilities included recommendations for wastewater treatment and collection facilities for urban areas currently without sanitary sewers or treatment facilities, capacity analysis of existing sewer system in Al Hillah, and recommendations for enhancing physical plant security.

United States Army Corps of Engineers, Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey: design of groundwater extraction and treatment system for the removal of polychlorinated biphenyls (PCBs) and chlorinated organic degreasing solvents. Facility features included seven extraction wells, treatment of contaminated water by filtration, air stripping and carbon adsorption prior to discharge to surface waters. An additional aspect of the design involved management of hazardous materials such as asbestos containing building materials, polychlorinated biphenyls, petroleum impacted soils, and coal tar impacted soils. Design included extensive semi-automated process control and instrumentation (PC&I) package including SCADA system for remote monitoring of extraction/treatment system.

New Jersey Department of Environmental Protection, Municipal Sanitary Landfill MSLA-1D, Kearney, NJ: Design of specialized pumping and pH control station to collect and convey landfill leachate to municipal sanitary sewer. The purpose of this system is to eliminate up to 83,000 gallons/day of leachate flows containing volatile organic compounds, polyaromatic hydrocarbons, pesticides and metals to the Passaic River. Design includes web-based SCADA system.

Naval Facilities Engineering Command, Camp Butler, Okinawa, Japan: Project engineer responsible for condition assessment and capacity analysis of installation sanitary sewer collection systems. Data developed incorporated into Master Plan to optimize deployment of USMC assets in the Pacific Theater. Key project goals included identifying key wastewater infrastructure in need of rehabilitation, replacement, or relocation to meet evolving mission requirements. Specific responsibilities include condition assessment, capacity analysis, review of topographic surveys, identification of potential impacts, design of mitigation measures to counteract potential impacts, preparation of a comprehensive report, and drafting conceptual design drawings. Coordination with project team consisting of U.S. and Japan-based A-E firms.


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