

G. ALEX CHURCHILL

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EXPERIENCE

InfoSense, Inc. January 2011- Present

Charlotte, NC

Start-up sensor development and manufacturer of custom inspection tools for water-wastewater industry.

Chief Executive Officer

Responsible for the expanding the adoption of InfoSense's award-winning acoustic inspection technology - the Sewer Line Rapid Assessment Tool, through both product sales and service contracts

TOWERWORX, LLC September 2009- June 2010

Tulsa, OK / Lexington, NC

Start-up manufacturer of custom mobile tower systems for defense, telecom, and disaster recovery applications

Interim President

While running company, evaluated viability of business model, operating strategy, and overall industry, as a potential equity investor

- Determined expected market demand could not profitably cover fixed cost-base. Implemented plan reducing fixed cost by >15% thru G&A headcount reduction and reduced investment
- Developed detailed product costing analyses that led to a new pricing strategy with reduced discounts, more options, and converged portfolio pricing – generating a 20+% increase in revenue per unit
- Led multifunctional team to design and produce three key new product segments in a six month period – expected to generate majority of future revenues as category matures

ALLIED WASTE INDUSTRIES/REPUBLIC SERVICES, 2007– June 2009

Charlotte, NC

2nd largest waste company in America – with \$6.1 billion in annual revenue – merged in late 2008 with the third largest waste company - Republic Services

Market Vice President - Carolinas

Full P&L and market strategy responsibility for Carolinas District – \$275MM in revenue and \$93MM in cash flow thru a cross-functional HQ staff, eight General Managers and 740 employees

- Increased ROIC from 23% to 27% thru strategic pricing, improved asset utilization, and cost control
- Attracted, developed, and retained talented leadership team – achieved challenging business objectives while reducing headcount by over 5% - ongoing savings \$1.6MM/year
- Negotiated landfill expansion project between public and private opposition – avoided \$12MM asset impairment and now generating \$1MM/year in incremental cash flow

BLUE RHINO, a Division of Ferrellgas LP 2002 – 2007

Winston-Salem, NC

The leading provider of propane tank exchange in America with revenues of ~\$300 million/year

Director of Operations 2005 - 2007

Responsible for eleven production plants, \$150M in revenue and \$30M in cash flow thru a team of 8 General Managers and 350 employees

- Created and initiated execution of national network strategy - \$25MM/year ongoing savings opportunity
- Reduced production cost/unit by 26% between FY06 and FY07 leading to \$2MM/yr in ongoing savings

Jack B. Beers III, GISP

Principal, Regional Team Leader, GIS Specialist

Mr. Beers is a GIS Specialist with 16 years of experience in GIS data development, analysis, enterprise implementation and integration. His current focus, facilitating and configuring utility (water and sewer) information systems and GIS maintenance and configuration, helps to facilitate municipal and county utilities and local governments by taking advantage of industry standard best practices. Mr. Beers has worked closely with many utility and government entities to migrate and implement enterprise-wide GIS data models and workflows. Data modeling experience includes implementing Esri's full Local Government Information Model as well as creation/integration of custom data models such as cadastral and Esri's Parcel Fabric, emergency operations and services, water, sewer and storm water, asset inspections, capital improvements and voter registration. Mr. Beers has implemented many custom enterprise systems which includes automated workflows for database administration and maintenance as well as data versioning/replication via custom VBScript and Python scripting. Mr. Beers is fully skilled with Esri's suite (ArcGIS Desktop/Pro, ArcGIS Server and ArcSDE, Portal for ArcGIS, Insights, etc.) as well as SQL Server.

Asset Management

GIS Specialist, Clean Water 2020 Program Management, Information Management System, City of Columbia, Columbia, South Carolina (2014 – Present). Mr. Beers assists with task management and is technical lead in the development of an Information Management System required for development within the City's Consent Decree and \$750 million program. The task included development of the City's water and wastewater GIS database schema and workflow practices. Mr. Beers administers the multi-user versioned SDE editing environment used to update the City's water and wastewater assets and manages all data QA/QC procedures required with the large amount of incoming survey and inspection data. Mr. Beers assisted in the development of standard specifications required within each survey and asset inspection contracts. He helps to facilitate the transaction of data input/output through various asset management systems utilized by the City's Utility Department (CMMS, Data Collection, GIS, Capital Planning).

GIS Specialist, Pinellas County FL, GIS Editing Professional Services to Water, Wastewater, and Reclaimed Water GIS Asset Systems (2023 – Present). Mr. Beers is task manager and technical lead of assisting Pinellas County with updating their GIS asset registry for water, wastewater, and reclaimed water. Tasks include, updating the GIS registry with backlogged capital project as-built drawings and updating the systems water service line inventory for preparation of the EPA LCRR Inventory requirement. Mr. Beers is also developing a utility system GIS integration plan that will assist Pinellas County with creating business cases for future asset management requirements.

GIS Specialist, US Army Corps of Engineers, Institute for Water Resources, GIS Water Availability Tool Study (2023 – Present). Mr. Beers assists with task management and is technical lead in assisting the USACE IWR with identifying examples of existing GIS-based methods and tools that may be useful in predicting future requests for water supply studies and assessing which of these methods and tools would be most relevant and

Education

BS – Geophysics / Geography, University of South Carolina, 2013

Certifications

Certified GIS Professional (No. 71800)

NASSCO Certification (No. U-1014-06022559)

- Pipeline Assessment Certification
- Lateral Assessment Certification
- Manhole Assessment Certification

suitable to evaluate for predictive skill. Using historical data sets and comparing the predictions of selected methods and tools, a risk assessment is being conducted of the reservoirs and a tool is to be developed for the USACE IWR to use with future predictions.

GIS Specialist, MetroConnects Clean Water Forward Program Management, Information Management System, Greenville, South Carolina (2021 – 2023). Mr.

Beers assists with task management and is technical lead in assisting MetroConnects in updating their Information Management System. MetroConnects is consolidating (taking ownership of) with 6 other local sewer utilities. Mr. Beers assists MetroConnects with data management, storage, and strategies for future integration of data received from the other utilities. Mr. Beers worked with MetroConnects to geocode 40,000+ new customers and update the consolidated utilities GIS networks and schemas using ArcGIS Data Interoperability. Mr. Beers developed an approach to update the consolidated utilities asset IDs to conform with MetroConnects' existing ID schema. This task involved development of custom Python scripting and managing a team to apply strategies. Mr. Beers also led the development of an information management system gap assessment. The gap assessment consisted of interviewing key stakeholders and analyzing all internal systems with a focus on integration and overall alignment for the organization. Data management and information management strategies are ongoing and future development of a gap assessment and asset management strategies are in development now.

GIS Specialist, Raleigh Stormwater Asset Management Program, City of Raleigh, North Carolina (2020-2023). The City of Raleigh, NC is currently working through a

storm water asset management program focused on modeling risk and integrating results with Cityworks Operational Insights. The risk analysis will result in a targeted CIP workflow. Mr. Beers led the task of interviewing key staff and stakeholders for the purpose of analyzing Raleigh's business practices to document recommendations related to creating a structured asset management program and a long-term data management plan. Mr. Beers is currently assisting in the task of developing a calculated risk framework that will be integrated with Cityworks Operational Insights.

GIS Specialist, Program Management/Information Management System

Development, City of Fort Smith, Fort Smith, Arkansas (2015 – 2018). Mr. Beers assists with the task of developing of an Information Management System required within the City's Consent Decree and has developed a GAP assessment of the City's information management workflows. Following the GAP assessment, a conversion the City's wastewater CADD data to an Esri based GIS database schema was accomplished. Currently assisting the City with developing workflow practices for updating and maintaining assets in conjunction with a new Information Management System comprised of Lucity CMMS and GraniteNET.

GIS Specialist, MetroConnects Deferred Maintenance - Greenville Regional Capital Needs Assessment, Greenville, South Carolina (2018-2019). Mr. Beers led task to

perform sewer assets' deferred maintenance cohort analysis on MetroConnects and surrounding utilities. The purpose of the study was to assess capital needs cost associated with deferred maintenance encumbered over many years. With the possibility that MetroConnects would integrate surrounding public service districts into their organization, they needed to know the associated future costs with maintaining the new assets. The cohort analysis was performed using Innonvyze InfoAsset Planner and

individually analyzed each utility's existing GIS utility networks for age, material, and rehabilitation against regionally established useful life curves to estimate how much maintenance has been deferred over the life of the utility.

GIS Specialist, MetroConnects Business Performance Audit, Greenville, South Carolina (2019). Mr. Beers assisted team with interviewing key staff for purpose of analyzing MetroConnects' business practices associated with the following core attributes for effectively managed wastewater collection systems: system inventory/information management, maintenance management system, safety and training, overflow emergency response plan, collection system maintenance, source control, structural condition assessment/evaluation, system hydraulic capacity assessment/evaluation/assurance, standard design/construction and inspection, communication and outreach, monitoring/measurement and modification, and adequate funding. Mr. Beers led interviews and documentation for the system inventory/information management and the maintenance management system.

GIS Specialist, CMMS and GIS Gap Analysis and Strategic Plan, Greenville Water, Greenville, South Carolina (2017). Mr. Beers assisted with interviewing stake holders and employees to document recommendations related to computerized maintenance management system (CMMS) and GIS implementation/configuration, system architecture, database design, process realignment, and training.

GIS Specialist, South Carolina Department of Health & Environmental Control Dam Safety Program, Columbia, South Carolina (2017 – Present). Mr. Beers worked with dam inspection project management to track and plan for inspections of over 2,000 dams in an online dashboard environment. As inspections were completed, Mr. Beers created a mapping workflow that mapped all dams as mapbooks to be included in Emergency Action Plans (EAPs). The mapping workflow was fully scripted to allow for personnel to map the dam's downstream inundation area, depths of dams and potential at-risk structures. Mr. Beers also trained DHEC and program staff to run the mapbook scripts providing ongoing support as needed.

DHEC uses the National Inventory of Dams (NID) database and recent inspection data to supply information about each dam for analyzing and creating inundations in DSS-WISE Lite. Mr. Beers led a task to use LiDAR based measurements and analysis to update dam parameters such as dam height, normal and max pool elevation, surface area, volume and dam crest length. All measurements were derived strictly from LiDAR to be used as comparison with inspections and the NID database for final use within the DSS-WISE Lite software.

DHEC uses DSS-WISE Lite inundation modeling software to produce inundation areas and respective information about the inundation. Mr. Beers worked closely with the DSS-WISE Lite software team from University of Mississippi, FEMA, and DHEC to create a seamless digital elevation model sourced from state/county collected LiDAR. The updated DEM allows for a much more accurate representation of each inundation.

In 2019, DHEC began implementation of a Screening Level Risk Assessment (SLRA) matrix that included detailed documentation assessment/modeling for flooding and seismic condition and criticality. The SLRA flooding and seismic assessments were converted to GIS format and modeled for update ArcGIS Survey123 so DHEC staff can easily maintain and re-assess as needed.

As part of the program management general task, Mr. Beers provides on-going support for all supplementary data and data management needs and has provided on-going GIS training for staff.

GIS Specialist, CMMS and GIS Gap Analysis and Strategic Plan, Greer Commission of Public Works, Greer, South Carolina (2016). Mr. Beers assisted with interviewing stake holders and employees in order to document recommendations related to computerized maintenance management system (CMMS) and GIS implementation/configuration, system architecture, database design, process realignment, and training. The developed plan included recommendations for how to implement, maintain, and manage their CMMS and GIS environment in support of more effective customer service, asset management, capital planning, and operations and maintenance.

Stormwater

GIS Specialist, Town of Mount, Hobcaw Drainage Study (2018-2019). Mr. Beers managed GIS data collection, management, and drainage analysis for the purposes of creating a detailed evaluation of the drainage conditions in the Hobcaw Point subdivision. Mr. Beers led the task to create a localized GIS watershed subbasin to perform all analysis within and organized all sourced data for the report. The study helped determine drainage area boundaries and identified challenges within each sub-watershed that may impact drainage, flooding issues and future CIP budgeting.

Transportation

GIS Specialist, South Carolina Department of Transportation Statewide State-wide Scour Assessment and Management Program, Columbia, South Carolina (2019-Present). Mr. Beers led task to collect, maintain, analyze, and track data required for SCDOT's state-wide scour assessment needs. First task was to perform a criticality assessment on the state's scour critical bridges to determine order of prioritization for inspection and documentation. A GIS portal website was designed to help track documented data collected on existing scour assessments as well as map all related data. Quickbase (cloud managed database service) was utilized for management and performing all inspection of the scour critical bridges.

An inspection template was customized using Quickbase to allow for standardized field inspections and management across five consultant firms. Once the 9,000+ inspections were performed, a customized report was generated using Microsoft Access to give all five consultants the ability to generate reports for their perspective bridges. The Quickbase database was also connected to SQL Server using QuNect ODBC services to allow for download, management, and re-naming of 100,000+ inspection attachments. The GIS Portal was also connected to the Quickbase database to allow relationship of bridge points to inspection data.

On-going tasks include creating detour routes for all scour critical bridges. Detailed detour maps, turn-by-turn directions as well as relevant detour information is required for all scour reports.

GIS Specialist, Town of Mount Pleasant On-Call Bridge Inspections, Mt. Pleasant, South Carolina (2018-Present). Mr. Beers manages GIS data management and conversion of locally owned bridge inspections to be updated yearly. The bridges are

Experience Highlights

- Geographic Information Systems: Esri and Intergraph
- Computerized Maintenance Management Systems (CMMS): Cityworks Server and Lucity
- Computer-Assisted Mass Appraisal (CAMA): QS/1 and Patriot Properties
- Data Modeling: Esri's Local Government Information Model, Cadastral, Emergency Operation & Services, Voter Registration, Utility Asset Inspections, Water, Sewer, Stormwater and Capital Improvements
- Database Administration and Maintenance: SQL Server, and ArcSDE
- Enterprise GIS: Versioning, Replication, Data Access, Database Maintenance, Custom GIS Web Application, Custom GIS Mobile Applications
- CAD to GIS Data Conversion
- Utilities Capital Improvement Planning
- GIS Data Collection/ Planning
- LiDAR Delineation and Analysis

inspected using National Bridge Inventory Standards then converted into a custom GIS schema that relates the bridges Appraisal, Inventory and Condition Ratings, Maintenance, and Inventory along with the inspection report back to a GIS feature so all information can be disseminated from one point location in GIS.

GIS Specialist, Palmetto Railways On-Call Services, Charleston, South Carolina (2017-2018). Mr. Beers assists with GIS data development, collection, and organization when needed. This includes the dissemination of CAD data converted to GIS format.

GIS Specialist, South Carolina Department of Transportation I-26/I-20/I-77 Corridor Management Plan, Columbia, South Carolina (2017-2018). Mr. Beers was the GIS data manager for the project. He assisted in organization of all GIS data developed and disseminated for the plan. He assisted in creating all map figures required.

GIS Specialist, South Carolina Department of Transportation On-Call Travel Demand Modeling and Transportation Planning, Columbia, South Carolina (2014-2016). Mr. Beers frequently assists with information management and GIS data development and dissemination.

GIS Specialist, South Carolina Department of Transportation Statewide Multimodal Transportation Plan, Charting a Course to 2040, Columbia, South Carolina (2014-2016). Mr. Beers was the GIS data manager for the project. He organized all GIS data collected, developed, and disseminated for the plan as well as ensured all data sources were quality-controlled meet standards required. He managed the creation and organization of all analysis and report map figures.

Prior to CDM Smith

Asset Management

GIS Specialist, Manhole Assessment, City of Columbia, Columbia, South Carolina.

Mr. Beers assisted in the development of a database schema and workflows for capturing and managing data for an MACP Assessment. The database included built in checks for defect coding. The workflows included courting the data in field, transferring the data to an in-house central repository for quality control procedures and uploading into a delivery database. He assisted in the development of specifications and programming for reporting the condition of manholes and components from data captured during the MACP project.

GIS Specialist, Asset Management and Capital Improvement Program, Mount Pleasant Waterworks, Mount Pleasant, South Carolina. Mr. Beers developed an automated GIS model to score condition and criticality of water utility assets based upon criteria for best management practices. The data was used to prioritize assets for capital improvements. He analyzed the data, developed map documents, graphs and written documentation to support the findings for the reports and capital improvement program.

GIS Specialist, Asset Management Program, University of South Carolina, Columbia, South Carolina. Mr. Beers developed an automated GIS model to score condition and criticality of chilled water, steam and condensate utility assets based upon criteria for best management practices. The data was used to prioritize assets for capital improvements. He analyzed the data, developed map documents, graphs and written documentation to support the findings for the reports and capital improvement program.

Cadastral, Tax Parcels and Assessment

GIS Specialist, Calhoun County, GIS Cadastral Support; St. Matthews, South Carolina.

Mr. Beers provided quality control checks of the parcel data, performed backlog maintenance, and developed relationships of cadastral data to ownership data. Work elements included the development of a cadastral data model and customized CAMA/GIS integration software. He provided training for best practice of cadastral maintenance and supported the client with technical support.

GIS Specialist, Barnwell County, GIS Cadastral Support, Barnwell, South Carolina.

Mr. Beers provided quality control checks of the parcel data, performed backlog maintenance, and developed relationships of cadastral data to ownership data. Work elements included the development of a cadastral data model and customized CAMA/GIS integration software. He provided training for best practice of cadastral maintenance and supported the client with technical support.

GIS Specialist, Dillon County, GIS Parcel Project, Dillon, South Carolina. Mr. Beers provided quality control checks of the parcel data, performed backlog maintenance, and developed relationships of cadastral data to ownership data. Work elements included the development of a cadastral data model and customized CAMA/GIS integration software. He provided training for best practice of cadastral maintenance and supported the client with technical support.

GIS Specialist, Hampton County, Parcel Maintenance and GIS Support, Hampton, South Carolina. Mr. Beers provided quality control checks of the parcel data, performed backlog maintenance and developed relationships of cadastral data to ownership data. Work elements included the development of a cadastral data model and customized CAMA/GIS integration software. He provided training for best practice of cadastral maintenance and supported the client with technical support.

GIS Specialist, Jasper County, Parcel Maintenance and GIS Support, Ridgeland, South Carolina. Mr. Beers provided quality control checks of the parcel data, performed backlog maintenance and developed relationships of cadastral data to ownership data. Work elements included the development of a cadastral data model and customized CAMA/GIS integration software. He provided training for best practice of cadastral maintenance and supported the client with technical support.

GIS Specialist, Laurens County, Cadastral Creation, Parcel Maintenance and GIS Support, Laurens, South Carolina. Mr. Beers developed the County's initial cadastral geodatabase through heads-up digitization. He assisted with ArcSDE versioning and replication workflow used to provide bi-weekly deliveries of the data. Provided quality control checks of the parcel data layer, backlog maintenance and development of related GIS data layers in the Assessor's office. Work elements included the development of the cadastral data model and customized CAMA/GIS integration programming. He provided training for best practice of cadastral maintenance and supported the client with technical support.

GIS Specialist, Newberry County, Parcel Maintenance and GIS Support, Newberry, South Carolina. Mr. Beers provided quality control checks of the parcel data layer, backlog maintenance and development of related GIS data layers in the Assessor's office. Assisted in the development of the cadastral data model and customized CAMA/GIS integration

programming. He assisted in the development of tax parcel editing within Esri's parcel fabric schema. He provided training for best practice of cadastral maintenance and supported the client with technical support.

Enterprise GIS

GIS Specialist, Calhoun County, Personal SDE Implementation, St. Matthews, South Carolina. Mr. Beers implemented and configured Personal SDE to support editing workflows between the Assessor's Office and the County. He assisted implementation of public cadastral web application and was charged with its maintenance and regular updates. He implemented a scripted and fully automated enterprise data maintenance program.

GIS Specialist, Charleston Water Systems, Upgrade Support, Charleston, South Carolina. Mr. Beers provided knowledge of implementing enterprise GIS, including key software and hardware components. He supported and coached the GIS manager on how to install and configure updated ArcGIS Server, ArcSDE and ArcGIS Desktop software. Support included configurations for setting up published web maps and integration with Cityworks CMMS. He provided enterprise GIS support for database maintenance and configurations. He implemented a scripted and fully automated enterprise data maintenance program.

GIS Specialist, Jasper County, Cityworks Implementation and Enterprise GIS, Ridgeland, South Carolina. Mr. Beers assisted with the implementation and configuration of ArcGIS Server Workgroup to support editing workflows between the Assessor, Emergency Management, Treasurer, Zoning and Public Works Departments. He assisted with the development of a custom internal cadastral web application. He assisted with County integration of QS/1 CAMA (Assessor and Treasurer), New World Systems (Emergency Management) and Cityworks CMMS (Public Works). He implemented a scripted and fully automated enterprise data maintenance program.

GIS Specialist, Laurens County, Enterprise GIS Implementation, Laurens, South Carolina. Mr. Beers assisted with implementation and configuration of ArcGIS Server Enterprise to support editing workflows between Assessor, Emergency Management, Treasurer and Voter Registration. He assisted with the development of custom internal and public GIS web applications and development of GIS mobile application that is utilized county-wide and is capable of producing/tracking work orders, delinquent tax postings and tax appraisals. He assisted with County integration of QS/1 CAMA and implementation of scripted and fully automated enterprise data maintenance program.

GIS Specialist, Lee County, Personal SDE Implementation, Bishopville, South Carolina. Mr. Beers implemented and configured Personal SDE to support editing workflows between Assessor, Emergency Management, Zoning, Building Permits and Treasurer. He implemented a scripted and fully automated enterprise data maintenance program.

GIS Specialist, Hampton County, Personal SDE Implementation, Hampton, South Carolina. Mr. Beers implemented and configured Personal SDE to support editing workflows between Assessor and County. He implemented a scripted and fully automated enterprise data maintenance program.

GIS Specialist, Newberry County, Enterprise GIS Implementation, Newberry, South Carolina. Mr. Beers assisted with implementation and configuration of ArcGIS Server Enterprise to support editing workflows between Assessor, Emergency Management, Treasurer, Zoning and School District. He assisted with development of custom internal and public GIS web applications as well as County integration of Patriot Properties CAMA. He implemented a scripted and fully automated enterprise data maintenance program.

School District

GIS Specialist, Newberry County, School District Attendance Area Information Analysis and Web Application, Newberry South Carolina. Mr. Beers assisted in the development of a GIS model which analyzes and compares the student's geocoded addresses to the District's attendance zones. He assisted in the development of a custom web application meant to portray transparency to the public. Using dissolved School District Zones, and a composite geolocator service which utilizes County supplied address points and School District supplied geocoded student address points, the web application assists student's parents/guardians in determining which school their child is zoned to attend.

Stormwater

GIS Specialist, City of Darlington, Watershed Planning and Analysis, Darlington, South Carolina. Mr. Beers assisted in the development of a watershed-based plan to utilize 319 grant funding. He developed a terrain dataset derived from raw LiDAR data and delineated localized watersheds and derived runoff characteristics utilizing specialized ESRI Spatial Analyst and 3D Analyst workflows.

GIS Specialist, City of Hartsville, Data Conversion, Impervious Surface Image Classification, GIS Stormwater Database Creation, Stormwater Asset Collection and Stormwater Fee Generator Application, Hartsville, South Carolina. Mr. Beers assisted with GIS implementation and development of a stormwater database schema. He provided mapping grade GPS data collection of stormwater assets and NPDES outfalls and used image classification software to build models for extracting impervious surfaces. He provided QA/QC of impervious surfaces via heads-up digitization and assisted with coordination and development of stormwater billing and maintenance program implementation to support the creation of a stormwater utility. He provided support of a custom stormwater fee generator application.

GIS Specialist, City of Orangeburg, GIS Stormwater Database and Asset Collection, Orangeburg, South Carolina. Mr. Beers assisted with GIS implementation and development of a stormwater database schema and provided mapping grade GPS data collection of stormwater assets and NPDES outfalls. He converted all hardcopy system maps to GIS and provided utility network maintenance and edit training to the City.

GIS Specialist, City of Sumter, Watershed Planning and Analysis, Sumter, South Carolina. Mr. Beers assisted in the development of a watershed-based plan in order to utilize 319 grant funding and developed a terrain dataset derived from raw LiDAR data and delineated localized watersheds and derived runoff characteristics utilizing specialized ESRI Spatial Analyst and 3D Analyst workflows.

GIS Specialist, City of Sumter, Stormwater Database Creation, Asset Collection and Impervious Surface Classification, Sumter, South Carolina. Mr. Beers utilized various methods and image classification software to extract and digitize impervious surfaces for the City to support the development of a stormwater Fee. The impervious surfaces were classified as commercial, residential and semi impervious. He provided mapping grade GPS data collection of stormwater assets and NPDES outfalls.

GIS Specialist, Sumter County, Impervious Commercial Surface Classification, Sumter, South Carolina. Mr. Beers developed a GIS impervious surface data layer for commercial and industrial properties utilizing heads-up digitization.

Water and Sewer

GIS Specialist, Laurens County Water & Sewer Commission, Water Resource Master Plan; Laurens, South Carolina. Mr. Beers provided GIS analytical support for the development of a sustainable water resources plan through the year 2060. He developed temporal and spatial projection methodologies for population growth. The study utilized building permit data and local knowledge of County employees. These projects were overlaid on existing resources and service areas to project timing of estimated resource needs.

GIS Specialist, Laurens County Water & Sewer Commission, Cityworks Implementation, Laurens, South Carolina. Mr. Beers developed updated an SDE geodatabase schema to support Cityworks CMMS implementation. Schema included support for water and sewer assets and operational/inspection management. Schema was based upon existing database schema, Esri's Local Government Information Model, client's future needs for data analysis and special needs developed for use with Cityworks CMMS. He provided knowledge of the Esri's local government utility network editing template and provided utility network maintenance and edit training.

GIS Specialist, City of Thomasville, Water System Network Conversion and Development Thomasville, Georgia. Mr. Beers provided GIS specific project management oversight and facilitated data model workshops used to develop the City's water system network database. He provided a platform to transfer water system from CAD to GIS format and performed a specialized quality control check of water system network to ensure the highest spatial accuracy.

GIS Specialist, University of South Carolina, GIS Master Utility Plan, Columbia, South Carolina. Mr. Beers assisted in the development of chilled water, steam and condensate database schema used to track system assets. He assisted in the data conversion, GPS field collection of assets and development of the utility to be integrated with the facilities maintenance program.

Transportation

GIS Specialist, Spartanburg Area Transportation Study (SPATS), Multimodal/Intermodal Transportation Routing Web Application, Spartanburg, South Carolina. Mr. Beers assisted in the development of a public GIS web application which provides local residents and visitors with a tool to explore outdoor activities, explore local points of interest, and plan a route. Website functionality was developed to generate safest routes and directions for driving, cycling, and walking. He assisted in the

development of an extensive routing network that incorporates trails, sidewalks and bicycle safety studies to generate the safest route which utilized a pre-existing Bicycle Level of Safety (BLOS) study.

GIS Specialist, South Carolina Department of Transportation Mapping Technician, Columbia, South Carolina. As a private contractor (2011 – 2012), Mr. Beers was sub-contracted to provide cartographic skills for development and updates to South Carolina’s metropolitan and county highway maps.

Zoning

GIS Specialist, City of Orangeburg, GIS Zoning Implementation; Orangeburg, South Carolina. Mr. Beers developed a zoning database schema and provided data conversion of zoning data from CAD to GIS format. He provided support and training for annual Census Bureau Boundary and Annexation Surveys.

GIS Specialist, Newberry County, GIS Zoning Conversion and Implementation; Newberry, South Carolina. Mr. Beers developed a zoning database schema and provided data conversion of zoning data to GIS format. He provided support zoning edit support and training.

Professional Activities

Member (2008 – Present), South Carolina Arc Users Group (SCARC)

Member (2014 – 2018), Urban and Regional Information Systems Association (URISA)

Member (2015 – Present), Water Environment Federation (WEF)

Member (2015 – Present), Water Environment Association of South Carolina (WEASC), Capital District

Member (2016 – Present), American Water Works Association (AWWA), South Carolina Section

Committee Member (2017 – 2021), WEASC/SCAWWA Joint Asset Management Committee

Conference/Workshop Presentations

Beers, J.B., Hall, S. “Mapping 100% of the City of Columbia’s Sewer Network”, Esri Infrastructure Management & GIS Conference, Palm Springs, CA, 2023

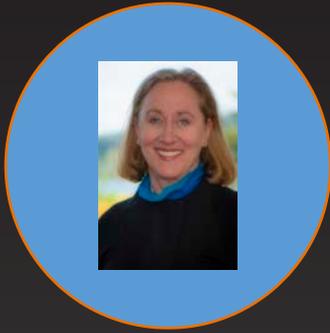
Beers, J.B., Hall, S. “Mapping 100% of the City of Columbia’s Sewer Network”, South Carolina Environmental Conference, Myrtle Beach, SC, 2023

Beers, J.B., Tittle, J. “Doubled Overnight: Consolidating Seven Utilities into One”, Esri Infrastructure Management & GIS Conference, Palm Springs, CA, 2022

Beers, J.B., Tittle, J. “40% Growth Overnight: How Customer Accounts, Work Orders, and GIS became the Trifecta of MetroConnects Utility Data Management”, South Carolina Environmental Conference, Myrtle Beach, SC, 2022

Beers, J.B., Hall, S. “Water Valves, Hydrants, & Work Orders: Columbia, SC’s Determination to Find Everything Water”, South Carolina Environmental Conference, Myrtle Beach, SC, 2022

- Beers, J.B., Hall, S. "Utility Data QA/QC – A Clean Water 2020 Journey for Better Data", South Carolina Environmental Conference, Myrtle Beach, SC, 2021
- Beers, J.B., Hall, S. "What Did We Do Again? – The City of Columbia's Successful Work Order Management Approach", South Carolina Environmental Conference, Myrtle Beach, SC, 2021
- Beers, J.B., Mann, D. "Bringing Big Data Together for Utility Asset Management." South Carolina Environmental Conference, Myrtle Beach, SC, 2019
- Beers, J.B., McAcroy, L. "From DOS to Paperless: Fort Smith's Information Management Revolution." Utility Management Conference, Nashville, TN, 2019
- Beers, J.B., "Why Focus on Effective Data Management? Columbia, SC has 750 Million Reasons." Utility Management Conference, Nashville, TN, 2019
- Beers, J.B. "Smart Assets – How to Get Your Information Management System to Work for You." Arkansas AWWA&WEA, Hot Springs, AR, 2018
- Beers, J.B, Mann, D. "Improving Decision Making with Asset Management, Smart Infrastructure Applications, and Data Driven Dashboards." South Carolina Arc Users Conference, Columbia, SC, 2018
- Beers, J.B., Floyd, E. "Planning \$400M Worth of Projects? Try Aligning Information Management Systems for Efficient and Effective Project Selection." South Carolina Environmental Conference, Myrtle Beach, SC, 2017.
- Beers, J.B. "Reducing our Carbon Footprint Using a GIS Model & Web Maps", South Carolina Public Service Commission Water/Wastewater Workshop, Columbia, SC, 2017
- Beers, J.B. "Smart Assets - How to Get Your GIS Assets to Work for You." South Carolina Environmental Conference, Myrtle Beach, SC, 2016.
- Beers, J.B. "Utilizing GIS to Help Manage a Major Disaster Program, ArcGIS Online as a Powerful Tool." South Carolina Water Resources Conference, Columbia, SC, 2016.
- Beers, J.B. "Using GIS to Revolutionize the City of Columbia's Wastewater Data Management Practices." South Carolina Arc Users Conference, Lexington, SC, 2015.
- Beers, J.B., Cully B. "Using Standard Specifications and GIS to Help Manage Assets." Water Environment Association of South Carolina, Capital District Meeting, Columbia, SC, 2015.
- Beers, J.B., Floyd, E. "How Standard Specifications are Helping the City of Columbia Herd the Cats." South Carolina Environmental Conference, Myrtle Beach, SC, 2015.
- Beers, J. B. "The Ins and Outs of Redistricting: Modeling Errors for QA/QC." South Carolina Arc Users Conference, Columbia, SC, 2013.
- Beers, J. B. "LCWSC Water Resources Master Plan, Population Projection and Distribution." Poster Presentation, South Carolina Arc Users Conference, Columbia, SC, 2010.
- Beers, J. B. "Planning your GIS for Stormwater management in the Pee Dee" Pee Dee Arc Users Group, Florence, SC, 2010.
- Beard, B., Beers, J.B. and Mole, M., "Using ArcServer GIS Technology for a Scalable Enterprise Solution." South Carolina Arc Users Conference, Columbia, SC, 2010.



Susan Burke Ph.D.

Principle Economist

Education

Ph.D. Environmental and Agricultural Economics, Oregon State University

M.S. Agricultural Economics, University of California, Davis

BS, Finance, California State University, East Bay

Affiliations

>Adjunct Professor, Western Washington University, College of Business and Economics, 2010 to current

>Puget Sound Partnership Social Science Advisory Panel, 2019 to current

RE Sources Board of Directors, 2023 - present

Whatcom County Marine Resources Committee, 2008 – 2010

Years of Experience

23

Proficiencies

Excel, PowerPoint, Access, SQL, Stata, GAMS

Dr. Burke’s environmental management career has been devoted to the valuation and analysis of water management and policies related to water use, specifically incorporating economics into resource management decisions. She is widely recognized for developing innovative ideas to problems faced by resource managers, balancing economic and environmental benefits particularly in the agricultural and M&I areas. Her areas of expertise include water valuation, development of environmental service markets, total benefit and cost assessments and analysis and development of environmental policy. She is skilled at working across various disciplines and with various governmental agencies – federal, state and local.

Relevant Project Experience

Puget Sound Estimated Future Sewer Rates Residential Index Impacts, on-going, Puget Sound Partnership

The 58 wastewater treatment plants that discharge effluent into Puget Sound are facing significant capital upgrades to comply with the Department of Ecology’s 2020 Nutrient General Permit. The Puget Sound Partnership’s Marine Water Quality initiative (MWQ), utility managers and jurisdiction representatives have expressed concerns about the extent to which ratepayers may pay a disproportionate share of regional nutrient reduction costs. The study answers the question “Do current and estimated future wastewater utility rates exceed U.S. Environmental Protection Agency (USEPA) affordability benchmarks?” Dr. Burke, through her affiliation with Western Washington University, and in collaboration with Puget Sound Institute lead a team to assess current and estimated future wastewater rates for 80 utilities in Puget Sound jurisdictions. Preliminary results suggest nearly 25 percent of Puget Sound utilities’ residential index will be high impact.



Return on Investment for Irrigation in Manitoba, EMILI, Manitoba Canada, 2022 (Senior Economist)

The government of Manitoba seeks to understand the potential impact to the environment and the economy of expanding the number of acres served by irrigation. Susan collaborated with Stantec engineers, planners, hydrologist to lead the economics team in the development of a framework to consider both the economic impact to growers and the regional economy utilizing the beneficiary pays concept. Three scenarios were developed, varying the increase in irrigated acres.

Various Projects related to water valuation and allocation on the U.S. Bureau of Reclamation's Klamath Project, Oregon and California 1999-present (Senior Economist)

- > 2018 – present Update and document the Klamath Project Hydrologic and Economic Model (KBHEM) to estimate potential impacts of recent changes in water availability on the agricultural economy of Klamath County, Siskiyou County and Modoc County. Through her affiliation with WWU and in collaboration with the U.S Bureau of Reclamation (Reclamation) Technical Service Center (TSC) Economics group Susan will be instructing TSC economists how to run the GAMS-based Klamath model and further, to generalize the GAMS-model for use in determining potential economic impacts of climate change on other Reclamation projects throughout the west.
- > 2013, Klamath Basin Restoration Agreement EIS and the Secretarial Determination. Estimate the value of water used in agriculture and the potential economic impacts of changes in on-farm decisions that growers may make in response to changes in long-term water supplies that result from removal of the Klamath dams.
- > 2008, Update of KBHEM to incorporate groundwater availability at a variety of electric rates and under varying estimates of lift. Utilized USGS report as the basis for assumptions about a sustainable annual volume of groundwater extraction used in agriculture on Project lands.
- > 2001, Water Allocation in the Klamath Reclamation Project, 2001," An Assessment of Natural Resource, Economic, Social and Institutional Issues with a Focus on the Upper Klamath Basin, Special Report 1037, December 2002 (Chapter 12). Oregon State University and University of California. Under contract to Oregon State University estimated the change in cropping pattern on Project lands from the reduction in surface irrigation that occurred in within the Project in 2001.

Review and Comments on the Draft Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the Bay-Delta: 2016 to 2018. Turlock Irrigation District, Modesto Irrigation District and Merced Irrigation District, Turlock and Merced, CA (Senior Economist)

California's State Water Board propose increasing the flows in the San Joaquin River which would reduce the volume of water diverted by local water agencies. Working for three of the local water agencies Dr. Burke provided comments on the State's estimate of the economic impact of the proposed plan. Comments submitted March 2017.

Socioeconomic Impact of the California State Water Resources Control Board review of the San Joaquin River Flow and Southern Delta Water Quality Objectives, to the economy of Merced County. 2014 to 2017. Merced Irrigation District, Merced, CA (Senior Economist)

Merced Irrigation District owns, operates and maintains dams, reservoirs, and hydroelectric facilities on the Merced River, a tributary to the San Joaquin River. Water from the District's facilities, located in the foothills of the Sierra Nevada mountain range, irrigates approximately 88,000 acres of prime agricultural farmland and provides municipal water supplies to the City of Modesto. The State Water Board updated the 2006 Water Quality Control Plan for the Bay-Delta (2006 Bay-Delta Plan) including a proposal to increase instream flow in the San Joaquin and its tributaries, effectively re-allocating water from MID users. Dr. Burke estimated the economic impact that the re-allocating may have on Merced County.

Review and Comments on the Socioeconomic Impacts of Water Shortages within the Hetch Hetchy Regional Water System Service Area prepared for the San Francisco Public Utilities Commission. Turlock Irrigation District and Modesto Irrigation District, CA (Senior Economist)

Turlock and Modesto Irrigation Districts jointly own and manage the Don Pedro Project. The City and County of San Francisco entered into an agreement to operate the Don Pedro Reservoir in collaboration with the City and

County owned Hetch-Hetchy Reservoir, located upstream of the Don Pedro Reservoir. Under the Don Pedro FERC re-licensing effort, the diversions to both the Don Pedro project and into the Hetch-Hetchy Regional Water System may be reduced. Dr. Burke provided comments on the proposed reduction in water supply to the Regional Water System.

Socioeconomic Impact of the FERC relicensing of the Don Pedro Project, Modesto, CA. 2013 to present (Senior Economist)

Turlock Irrigation District (TID) and Modesto Irrigation District (MID) are the co-licensees of the 168-megawatt (MW) Don Pedro Project (Project) located on the Tuolumne River in the Central Valley of California. The Project provides hydropower, flood protection, irrigation and municipal water supplies and recreational opportunities to the region. Project water irrigates approximately 200,000 acres of prime agricultural farm land and provides municipal water supplies to the City of Modesto. Dr. Burke estimated the value of water in its various uses and potential regional economic impacts should relicensing change the timing and quantity of water releases. The agricultural impacts are being modeled using a modified version of the Statewide Agriculture Production (SWAP) model. The Project's contribution to the local economy has been estimated to be approximately \$4.2 billion. In addition to the estimates of local regional economic impacts Dr. Burke is reviewing the estimates of potential economic impacts to the City and County of San Francisco.

2018 Wholesale Rate Change, Environmental Assessment. 2017

Tennessee Valley Authority provides wholesale power to over 8.9 million end-users in the Tennessee Valley. Faced with changes in fuel costs, and decreases in power demand due in part to increases in efficiency and the increase in the adoption of residential solar generation (DER) TVA is in the process of revising both its rate structure and magnitude of rates. Shifting more revenue generation to a fixed versus volumetric charge. Dr. Burke analyzed the potential impact the change would have to the rate of adoption of DER and the potential impact on low-income households.

Boone Dam Remediation Environmental Assessment., 2015.

Boone Dam, owned and operated by the Tennessee Valley Authority (TVA), impounds Boone Reservoir a multi-use reservoir primarily providing flood protection and recreation opportunities to a three-county region in northeastern Tennessee. In October 2014, a sinkhole was discovered near the base of the embankment at Boone Dam, and water and sediment were found seeping from the riverbank below, compromising the safety of the dam. Dr. Burke led the team of economists that developed the socioeconomics assessment of TVA's action and wrote two sections for the EA; Recreation and Socioeconomics. The analysis focuses on the impact that the reduced access to recreational amenities on the reservoir would have to visitors and shoreline property owners.

Stormwater Strategy, Puget Sound Partnership, Olympia, Washington. 2013-2014.

The Puget Sound Partnership (PSP) is a Washington State agency tasked with restoring the Puget Sound by 2020. The PSP is convening a group of interested parties to discuss the results of a survey of other states' watershed-based municipal storm water permit programs. This work implements a revised approach to Near-Term Action C2.1.1 in the 2012 Action Agenda, which calls for a survey and discussion of watershed-based stormwater permit programs implemented around the nation. Susan serves as the PM to manage the technical experts in the development of the survey and the facilitation process of reviewing the results of the survey and discussing application of findings to Puget Sound.

Hydraulic Code Rule Economic Impact Analysis. Washington Department of Fish and Wildlife. Olympia, Washington. 2014.

WDFW is revising the Hydraulic Code rules to improve protections for fish and streamline the permit approval process. The Hydraulic Project Approval (HPA) permit is authorized through Chapter 77.55 RCW, and administered through rules in Chapter 220-110 WAC. RCW 19.85.030 requires state agencies conduct a SBEIS if a proposed rule will impose more than minor costs on businesses in an industry.



RCW 34.05.328 requires WDFW to conduct cost-benefit analysis of its legislative rulemaking to determine whether expected benefits of the proposed rule are greater than expected costs, considering both quantitative and qualitative costs and benefits. Susan is PM of the project to assess both the cost benefit of the proposed rule changes and determine whether the rule changes would have a disproportionate impact on small businesses.

Dr. Robert Bornhofen

Email: robert.bornhofen@dcwater.com | <https://www.linkedin.com/in/bornhofen/>

VALUE PROPOSITION

- As an **Educator and Coach** in Higher Education with over seven years of teaching experience:
 - As an Adjunct Associate Professor for the **University of Maryland Global Campus**, I teach the MBA capstone course. Recognized with the distinction of being named “**Outstanding Adjunct Faculty**” achievement (2021-2023).
 - As an Adjunct Course Facilitator at **Cornell University**, I taught 450+ executives and mid-level managers across multiple industries on what it takes to innovate. Very knowledgeable in the full spectrum of **Innovation Management**
 - As Head Facilitator, I helped deliver a certification program at the **Kellogg School of Management**, Northwestern University. Curriculum includes applying digital technology to **Operations Management** in creating competitive value.
- As a dynamic **Innovation Leader**, I bring *hands-on experience* in implementing change initiatives involving **innovative solutions**. Oversaw efforts that ranged from problem formulation, ideation, partnering, incubating, and development / launch of new products. **Led ideation campaigns** that led to hundreds of ideas from a diverse set of creative employees & business partners. Managed budgets. Promoted innovation across the enterprise, engaged senior leaders, involved employees & SMEs. Led innovation programs for **DC Water, IBM, Citibank, and Delta Air Lines**.
- As a **Strategic Business Partner** with 12+ years of experience, most recently at for IBM (Enterprise Services Division), I owned the process for developing the **annual strategic plan**. Partnered with Senior Leadership stakeholders across three business units. Reviewed various options and adopted specific tactics that aligned to IBM’s strategic goals. Identified **key long- and short-term strategic opportunities**. Similar strategy experience at Citibank & Delta Air Lines. As an Adjunct Professor, I teach business strategy to MBA candidates at the **University of Maryland**.

Recognition:

- **Outstanding Adjunct Faculty** achievement, University of Maryland (2021-2024)
- Recognized for **leading a global innovation program** across Asia Pacific, EMEA, & the Americas that led to 12 successful **prototype solutions** involving **advanced technologies** (IBM)
- Recipient of the *Quality Excellence Award* for **Outstanding Leadership** (Citibank)
- Recipient of a **certificate in International Business** from the Thunderbird School of Global Management in recognition of leadership contributions (Delta Air Lines)
- Holder of two *U.S. Patents* for **novel invention**

As an experience **Innovation Leader for DC Water**. Oversee innovation across the organization to develop and grow DC Water’s innovation program in creating value for customers in the District of Columbia and suburban Maryland & Virginia. Responsible for **program and strategy development**, oversight of research and idea capture, key stakeholder engagement, partnering, value creation, delivery, communication and staff workforce engagement, & innovation sustainability

As an experienced **Academic** (Adjunct Professor) who loves to teach, I offer a mix of teaching knowledge. I offer over seven years of demonstrated teaching excellence at the graduate & undergraduate levels in delivering courses in both **online & classroom** settings. Familiar with learning management systems (Canvas) and **multimedia technologies** for video, audio, & immersive learning.

As a **Researcher** who specializes in Human-Centric discovery, I led efforts at IBM involving **Design Thinking** on multiple projects to capture **customer frustration & unmet needs**. Taught Design Thinking principles to students (Cornell & University of Georgia). Proficient at rapidly adapting and responding to what is learned and needs to be applied & accomplished.

EDUCATION

- **Doctorate Degree** in Management, University of Maryland, Global Campus
- **Master's Degree** in Information Systems, Colorado State University
- **Bachelor's Degree** in Business Administration, University of Minnesota
- **Executive Certificate** in International Business, Thunderbird School of Global Management

ACADEMIC EXPERIENCE

Adjunct Professor (*Global Strategy*) | University of Maryland, Global College | 2017 – current

Course Title: Global Marketplace Strategy. I teach the **MBA capstone course**. Over 125 MBA students have learned to research, formulate, and implement strategy. This encompasses **gaming simulation and decision making** over a broad range of **business disciplines**.

Adjunct Professor (*Innovation Strategy*) | Cornell University | 2019 – current

Program Title: Innovation Strategy. I taught over 200 executives & mid-level managers a **five-segment curriculum on Innovation Strategy**. Curriculum includes various ways to innovate, competencies, tools, implementation methods, and means to launch new products to market.

Head Facilitator (*Digital Operations Strategy*) | Northwestern University | 2021 – 2023

Program Title: Operations Management: Digital Strategy. I moderate discussions and advance learning in this topic area. Most of the students are international. Curriculum includes operations management, digital strategy, & quality assurance.

Instructor (*Design Thinking*) | University of Georgia | 2014 – 2015

Taught several course segments on **Design Thinking** and **Innovation Management** to undergraduate & MBA students (part-time, 2014-2015).

Taught Digital Strategy & Innovation Management to 20+ visiting managers from China as part of the *Norinco Program Exchange*.

Adjunct Professor | CEDIM – Master of Business Innovation | 2015 Monterrey, Mexico

Developed and taught curriculum on "**New Product Innovation**" to 20+ graduate students as part of a Master of Business Innovation (MBI) Program.

SCHOLAR-PRACTITIONER

Educator, Coach, Mentor

- *As a Scholar*: Apply relevant theory, research, and discussion from which to inspire students to learn about innovation strategy and entrepreneurship
- *As a Practitioner*: Interject 20 years of practical experience in Innovation Leadership & Strategy to extend competency-based learning
- *As a Scholar-Practitioner*: Synthesize academic and practical knowledge into a comprehensive body of knowledge to stimulate student learning to provide a rich and deep learning experience.

What **differentiates my credentials** is the ability to **impact** what can get accomplished by engaging faculty, leadership, and external parties to solve key organizational challenges. Specifically, through creative ideas that lead to **new and improved uses technology** for teaching, learning, and research.

As a **Public Speaker and Presenter**, I have spoken at various international and national conferences. I am a recognized SME in the field of innovation strategy. Very effective at communicating to large, **multicultural audiences** as well as smaller settings among internal leaders.

RESEARCH / PRESENTATIONS / PAPERS

Research Studies & Conferences

- Presented topics on Innovation Strategy at various water industry conferences (2021-2023) (e.g., WEFTEC, UMC, SIWW, World Water-Tech, ACE, and AWWA)
- Academy of Management (2020 submission): *Gamifying Innovation Challenges*
- Scholarly Presentation: Inventive Problem Solving—Gamifying Innovation Challenges, Emerging Innovation Summit, Royal Melbourne Institute of Technology, Melbourne, Australia
- Scholarly Paper: Stoking the Innovation Engine: Gamifying Innovation Challenges, Innovation Arabia International Conference, Dubai, UAE
- Scholarly Presentation: *Stoking the Innovation Flame*, 16th International Open and User Innovation Conference, Stern School of Business, New York City
- Scholarly Paper/Presentation: *Diversity in Openness, Creativity in Thought*, 17th annual TQM Conference, Riyadh, Saudi Arabia

PROFESSIONAL WORK EXPERIENCE

Innovation Director | DC Water | 2021 – current

Oversee innovation across the organization to develop and grow DC Water’s innovation program in creating value for customers in the District of Columbia and suburban Maryland & Virginia.

Responsible for program and strategy development, oversight of research and idea capture, key stakeholder engagement, partnering, value creation, delivery, communication and staff workforce engagement, & innovation sustainability

Strategy & Innovation Leader | IBM | 2017 – 2019

Led efforts to formulate and develop strategy for IBM Enterprise Services.

- Researched, formulated strategy, & driving key programs that align to corporate objectives
- Organized & directed worldwide innovation efforts to generate business value while focusing on organizational enablement & engagement
- Championed hackathons and innovation challenges (vis-à-vis crowdsourcing) that generated 200+ ideas from a diverse set of employees & business partners

Recognition. Led global crowdsourcing & crowdfunding campaigns that led to 12 successful prototypes involving emerging technologies in AI, blockchain, & chatbot with natural language processing capabilities

Innovation Leader | Southwest Airlines | 2016 – 2017

Led a Lean Start-up program to incubate business concepts / ideas through rapid prototype discovery and learning

- Incubated business concepts through rapid prototype methods to assess results and validate assumptions

- Led a lean team of developers to apply new technologies & capabilities to creative ideas, including biometrics, NLP (w/Amazon Alexa), and IoT sensors & push notification

Recognition. Led team and delivered multiple rapid prototype efforts involving new, innovative technologies tied to business strategy. Queued prototypes up for future development & launch

Program Director | Avaya | 2008 – 2014

- Strategy & Innovation. Developed, implemented, & delivered growth strategies that involved new verticals in the public sector. Positioned solutions to disrupt conventional products
- Rapid Prototyping & Development. Led effort to develop and launch a new iPhone app through the Apple Store that involved geolocation and maps associated with farmer markets
- Business Development. Drove the marketing of product innovations that leveraged Avaya's market strength.

Recognition. Accelerated growth through new wins that involved product offerings.

Program Manager | U.S. Public Sector | 2004 – 2008

- Managed & marketed large programs within the U.S. Public Sector for Perot, QSS, & CHM

Director | Delta Air Lines | 2000 – 2003

- Strategy Formulation: co-led the transformation of a core business unit as part of a strategic modernization initiative. Supported business case development to depict the ROI and TCO performance objectives.
- Innovation Strategy: Helped shape vision, strategy, objectives, & future business models to modernize operations. Transformed operations through new technologies & improved processes

Recognition. Executive Development Program in recognition of leadership contributions

Vice President | Citibank (4 years)

- Strategy & Product Management. Managed six products split between Europe and North America. Transformed ideas and business insights into product enhancements and new features
- Innovation Strategy. Generated new account growth through innovative system features. Championed Executed strategy with Business Units to drive product development
- Commercially launched a new B2C eCommerce product to capture and approve new customers

Recognition. Recipient of the *Quality Excellence Award* for Outstanding Leadership

Manager | Deloitte Consulting (8 years)

- Problem solved among various commercial & public-sector clients and industries. **Formulated strategy** to help clients secure their environment. Supported two Wall Street firms and Ryland Acceptance Corporation on the issuance of mortgage-backed obligations to public investors.

Recognition: Four highly profitable bond offerings to public investors through Wall Street firms for my client, Ryland Acceptance Corporation.



Timothy D'Agostino, PE • SENIOR ENGINEER

PROFESSIONAL EXPERIENCE

PWGC: 2.75 years
Prior: 7 years

AREAS OF EXPERTISE

Civil Engineering
Environmental Engineering
AutoCAD
Civil 3D
Revit
Inventor
ArcGIS
EPA Stormwater Management Model



EDUCATION & TRAINING/CERTIFICATION

Master of Civil Engineering, University of Delaware
Bachelor of Environmental Engineering (Honors Program) Minor: Civil Engineering, University of Delaware
NYS Licensed Professional Engineer
OSHA 10 Hour Construction Certification
OSHA Confined Spaces Training
NACE I Coating Inspector
Part 46 New Miner Training

PROFILE

Mr. D'Agostino is a member of PWGC's Engineering Team as a Senior Engineer. He is experienced in the design of water wells, treatment systems, and storage and distribution systems. Mr. D'Agostino is responsible for construction permitting, specifications, reports, inspections, and project management. As a Senior Engineer, he has been in constant communication with clients, contractors, and supporting staff. He has provided project oversight not only in the field but also for technical documents, reports, plans, and designs. He has an excellent record in timely completion and maintenance of project coordination, monitoring, and document preparation, while successfully maintaining communication between clients, government agencies, and other parties involved.

NOTABLE PROJECTS

Town of Hempstead, East Meadow Water Department

1,4-Dioxane Advanced Oxidation Process (AOP) Treatment System

After testing revealed 1,4-Dioxane levels at or exceeding NYS Water Quality Regulations at the Town of Hempstead's East Meadow Wells 1 and 3 site, Mr. D'Agostino prepared design documents for a treatment system to address this emerging contaminant. Mr. D'Agostino analyzed the wells' raw water quality, historical records of pollution sources near the site, and available treatment technologies. Design constraints such as client budget, installation complexity and treatment efficacy were evaluated and findings and recommendations were documented in a design report and a pilot study plan for Town review and NCDH and NYSDOH approval. Mr. D'Agostino conducted a pilot study to test the treatment system at the well site and experimental results were incorporated into subsequent design enhancements and used to develop recommended operating criteria for the selected UV AOP treatment system. Mr. D'Agostino performed sample collection for a variety of analytes/analysis methods during the pilot study, including IOCs, PFAS, 1,4-Dioxane, 524, Acids, TOC, HAA9, and aldehydes among others. During the course of project, Mr. D'Agostino designed the water treatment system as well as the necessary site infrastructure upgrades to accommodate the treatment system such as electrical and piping improvements. The project is currently being constructed and Mr. D'Agostino is performing construction oversight.

Brookhaven National Laboratory, Upton, NY

Corrosion Control Desktop Study

A corrosion control desktop study was prepared for Brookhaven National Laboratory (BNL) following a lead action level exceedance under the Lead and Copper Rule. Mr. D'Agostino analyzed historical water quality to determine trends and simulated the implementation of various treatment options using the Rothberg, Tamburini & Winsor (RTW) model. Treatment alternatives were evaluated based on performance, reliability, feasibility, cost, and operational constraints. A final treatment and monitoring approach was recommended based on the analysis and discussed with the client.



Town of Oyster Bay, Tobay Beach Well No. 4

Well Testing and Rehabilitation

The Town of Oyster Bay's Tobay Beach Well No. 4 experienced elevated turbidity and high iron levels in the well discharge water. Mr. D'Agostino performed field oversight during the drill contractor's testing work to determine the cause of the turbid water. Intervals of the well screen were isolated and selectively pumped, and a camera inspection of the well casing was performed to determine the source of the turbid water.

Village of Farmingdale, Well 1-3

Treatment System

Weekly monitoring samples have indicated that the Village of Farmingdale's Well 1-3 has experienced contamination from emerging contaminants such as 1,4-Dioxane from upgradient sources. Mr. D'Agostino has worked with the Village to address this contamination in order to restore the well to regular service. After preparing a pilot study plan and gaining NCDH approval, Mr. D'Agostino conducted a pilot study to evaluate the efficacy of an ultraviolet advanced oxidation (UV AOP) system to treat the well water. Results of the pilot study plan were then used to write an engineering and design plans and specifications for a proposed UV AOP and GAC system for the site.

Community Water System, Riverhead

PFAS, Iron, and Manganese Water Treatment System

Elevated levels of PFAS, iron, and manganese were detected in a community's water system. Mr. D'Agostino designed a water treatment system to remove these contaminants from the drinking water. Treatment resins, granular activated carbon vessels, and a chlorine injection system were incorporated into the design to treat and disinfect the well water. Mr. D'Agostino prepared an engineering report for approval by the Suffolk County Department of Health Services. Following approval, design drawings were also prepared for construction.

Racetrack Facility, NY

Irrigation Wells

A racetrack facility in New York required a source of irrigation water for the facility's use. Mr. D'Agostino worked with the client's needs to design two irrigation wells and associated appurtenances in order to provide the necessary irrigation water.

National Grocery Chain, Private Client

Water Treatment Systems, Various

A national grocery chain client requires reverse osmosis, water softening, and other treatment systems at their facilities for food preparation. Mr. D'Agostino has provided consulting services during the design stage of these systems, as well as water sampling and analysis on a case-by-case basis to assist the client with water quality questions and concerns at their facilities.

East Moriches, Private Client

Ultraviolet Disinfection System

A private well serving a medical office was determined to be susceptible to bacterial contamination due to its proximity to a septic system. A UV disinfection system was designed to treat the well water to prevent any potential bacterial contamination in the water used by the business's staff and customers. Mr. D'Agostino conducted site visits, met with the client, performed field testing and flow analyses, and designed the treatment system to operate with the existing well pump and building plumbing.

City of Long Beach Water Department

Emergency Response Plan and Vulnerability Assessment

The City of Long Beach Water Department required a new emergency response plan and vulnerability assessment. Mr. D'Agostino worked with the water department staff to generate the necessary reports.

Long Island Community Hospital

Water Management Plan

Long Island Community Hospital required the preparation of a facility-wide water management plan (WMP) for the potable water system at their facility for the prevention of legionella bacteria. Mr. D'Agostino reviewed existing facility procedures and policies, met with the client, and reviewed current literature pertaining to the control, prevention, surveillance, monitoring, sampling, and disinfecting of legionella bacteria in order to prepare the water management plan.

Psychiatric Center, NYC

Water Quality Consulting

A psychiatric center in New York City was experiencing periodic discolored water from potable water faucets. Mr. D'Agostino worked with the client to develop a sampling plan, identify the causes of the discolored water, and design a disinfection plan to treat bacteria detected in the water.



Sayville Public Library, NY

Geothermal System Investigation and Report

Sayville Public Library maintains a geothermal system for heating and cooling of the facility. System piping experienced chronic leaking so PWGC was asked to investigate the cause of the deteriorating piping condition and provide recommendations for how to alleviate it. Mr. D'Agostino worked with the client and drilling contractor to design a water sampling plan to identify potential water quality or water chemistry issues. He visited the library to observe the piping and equipment conditions and prepared a report documenting the findings, recommendations for next steps, and corrective actions.

Northwell Health Systems, NY

Prevention of Legionella Contamination

Northwell Health facilities require ongoing compliance with policies and regulations for the prevention of legionella contamination.

Mr. D'Agostino has performed inspections, provided recommendations for best implementation practices, and prepared submissions for the health department.

Facility in Sag Harbor, NY

Geothermal System Investigation and Report

A facility in Sag Harbor maintains a geothermal system for heating and cooling. The existing wells experienced fouling and the diffusion wells suffered from plugging. PWGC was asked to investigate the potential causes of the geothermal system conditions and provide a written report with recommendations. Mr. D'Agostino worked with the client to develop a water sampling plan, identify water quality issues, and provide recommendations for corrective actions.

Northport, NY, Private Client

Drinking Water Quality Investigation

A private residence in Northport, NY, experienced frequent turbid water problems which sparked a comprehensive water quality study. Water samples were collected from service lines, various fixtures within the house, and accessory dwellings and were tested for metals, volatile organics, and a variety of general chemistry parameters such as TDS, specific conductance, and TOC among others. The resulting data revealed that the residence was experiencing high lead and copper concentrations in the drinking water. Mr. D'Agostino prepared an engineering report to diagnose and describe the problem, and prepared recommendations for piping replacement and corrosion control, on-site water treatment, and regular flushing to address the water quality concerns.

Manorville, Private Client

Potable Water System Retrofit

A private well serving a commercial property in Manorville experienced elevated nitrate concentrations above NYS drinking water standards. System retrofits were developed to convert the contaminated well into an irrigation water source. Concurrently, an existing on-site irrigation well that did not have nitrate contamination was retrofitted to supply potable water to the facilities. This change of use and redesign required new piping to be installed, existing piping to be capped, cross contamination studies to be conducted, plans to be submitted to the Suffolk County Department of Health Services for approval, and an engineering report to be written. Mr. D'Agostino conducted site visits, met with the client, performed field testing and flow analyses, and prepared drawings and reports in order to secure approval for the new system.

City College of New York, Manhattan

Potable Water Storage Tank Inspections

The City College of New York requested a licensed NYS engineer perform an inspection of the two pressurized water tanks serving one of their academic and scientific buildings, in accordance with NYC health code. The tanks were drained and Mr. D'Agostino inspected the tanks for unsanitary conditions, as well as the condition of associated piping. Mr. D'Agostino also collected water samples for testing for coliform and E. coli while on site, and a report was submitted to the New York City Department of Health and Mental Hygiene.

Various commercial and residential properties, NYC

Potable Water Storage Tank Inspections

Barclay Water Management requested a licensed NYS engineer perform drinking water tank inspections at various properties in New York City. Both pressurized and gravity tanks were inspected to ensure the systems satisfied NYC Department of Health and Mental Hygiene standards. Mr. D'Agostino also collected water samples for testing for coliform and E. coli while on site, and a report was submitted to the City.

Brookhaven National Laboratory (BNL), Upton, NY

Tolytriazole (TTA) Management Plan

A tolytriazole (TTA) management plan was prepared for Brookhaven National Laboratory (BNL) following SPDES exceedances at BNL's wastewater treatment plant. Mr. D'Agostino analyzed historical water quality and TTA concentrations, investigated causes and potential treatment technologies, and provided recommendations for TTA management in the future.



Westchester Hospital, Mt. Kisco, NY

Cooling Tower Inspections

In accordance with New York State Department of Health requirements, Mr. D'Agostino performed evaluations of Westchester Hospital's cooling towers. The towers were inspected for organic material, and the water make-up connections and controls were also evaluated. A formal report was prepared and submitted to New York State to document inspection findings.

East Farmingdale Water District, Private Client

Reduce Pressure Zone (RPZ) Design

A new medical facility was proposed within the East Farmingdale Water District and PWGC was retained to design the RPZ system to protect the public's potable water supply. Mr. D'Agostino performed system calculations, developed the design drawings, and secured approval for the work from the water district and Nassau County Department of Health.

PREVIOUS EXPERIENCE

D&B Engineers and Architects, PC, Woodbury, NY

Civil and Water Supply Engineer

2016-2020

Partnered with interdisciplinary teams of water supply, structural, and electrical engineers to design and upgrade water wells, treatment systems, and storage and distribution systems throughout downstate NY. Responsible for construction permitting, specifications, reports, inspections, and project management.

New York American Water, Nassau County

Lead Service Line Replacement Program

Designed and implemented a lead service line replacement (LSLR) program for two towns in Nassau County, NY (cumulative populations exceeding 15,000 residents). Project was recognized as an exemplar by the American Water Works Association and resulted in AWWA Water Event speaking invitation.

Port Washington Water District, Nassau County

Beacon Hill Elevated Water Tank

Responsible for the engineering review of submittals and full-time inspection for construction of a 250,000 gallon elevated water tank to replace an existing elevated tank. Reviewed engineering shop drawings, conducted coating inspections, and oversaw installation of site features including retaining walls, landscaping, and utilities. Conducted hydraulic calculations to ensure system reliability and adequate water capacity were maintained during construction.

SCWA, Port Washington Water District, and various other districts, Nassau and Suffolk County

Elevated Water Tank Cellular and Equipment Installations

Conducted shop and site coating inspections of equipment to be installed on elevated water towers. Evaluated environmental conditions for coating approval, and measured coating thicknesses. Climbed water towers to oversee installation of equipment and ensure existing tanks were protected and cathodic protection was maintained. Performed construction management, on-site inspections during coating and equipment mounting to ensure compliance with AWWA, National Association of Corrosion Engineers (NACE), and Society for Protective Coatings (SSPC) standards.

Incorporated Village of Old Westbury, Nassau County

Drinking Water Well Improvements

Responsible for the design of the rehabilitation of an existing well and well house, including well pump design, well repairs, and installation of variable frequency drives for booster pumps and an emergency natural gas generator

Incorporated Village of Plandome, Nassau County

Water Main Improvements

Responsible for the design and construction of new water mains within the Village in accordance with AWWA standards. All contract documents were approved by the Nassau County Department of Health.

Incorporated Village of Old Westbury, Nassau County

Drinking Water Well Improvements

Responsible for the design of a new potable water supply well, water treatment system, well house, and site development for integration of the new well into the existing distribution system.



Incorporated Village of Sands Point, Nassau County

Drinking Water Well Improvements

Responsible for the design and construction of an advanced metering infrastructure (AMI) system for wireless monitoring of water consumption at residential and commercial properties in the Village. Responsible for submittals and coordination with the Village and various contractors to ensure the meters and system complied with AWWA, NCDH, and owner standards.

Incorporated Village of Sea Cliff, Nassau County

Drinking Water Well Improvements

Responsible for the design of a new drinking water well (Well 1A), water treatment system, well house, and piping to integrate the new well into the existing distribution system. All contract documents received NCDH approval. Responsible for well house design in accordance with American Concrete Institute (ACI) standards and with approval of the Sea Cliff Architectural Review Board. Responsible for submittals and coordination with the NYSDEC including applying for a waiver from the moratorium on Lloyd Aquifer well construction, and designing a NYSDEC approved monitoring well to track the proposed Well IA's influence on saltwater intrusion.

Cold Spring Harbor Laboratory, Suffolk County

Geothermal Well System

Responsible for designing new water extraction and diffusion wells, and decommissioning an existing well and associated piping in accordance with applicable standards. Responsible for applying for NYSDEC permits for the expansion and retrofitting of an existing geothermal heating and cooling system at the Cold Spring Harbor Laboratory's research campus.

New York American Water, Suffolk County

Water Main Design

Responsible for survey, design, and construction of new water mains to replace ageing infrastructure. Responsible for coordinating with NCDPW, the Town of Hempstead, and the NCDH for project approval.

Multiple Water Districts, Nassau County

Elevated and Ground Water Tank Evaluations

Responsible for conducting tank evaluation inspections for water districts across Long Island. Tanks were evaluated for coating failures, remaining useable life, as well as sanitary, structural, and aesthetic considerations. Formal reports were provided to clients and remedies were detailed and documented. Clients included NYAW, Albertson Water District, Port Washington Water District, the Incorporated Village of Old Westbury, the Incorporated Village of Williston Park, Jericho Water District, Westbury Water District, and Freeport Water District among others.

R&M Engineering, Huntington, NY

Intern

2013-2015

As an intern, Mr. D'Agostino prepared AutoCAD site plans and traffic studies for corporate clients. He also conducted site inspections to ensure compliance with industry best practices.

University of Delaware (University of Delaware Watershed Action Team for Ecological Restoration), Newark, DE

Stormwater Management Initiative Intern

2013-2014

As an intern, Mr. D'Agostino collected water samples and data at a former Chrysler Plant/Brownfield during the school semesters. He also conducted hydrologic modeling in the Piedmont Watershed for erosion mitigation.

Eric S. Packer P.E.

15000 Golden View Drive • Anchorage, Alaska 99516 • (907) 644-2196 • eric.packer@hdrinc.com

PERSONAL PROFILE

Interdisciplinary engineer working at the intersection of infrastructure engineering and data science. Passionate about newly available data science technologies. Proven track record of developing new technology with US Patent in novel orthopedic biomaterials (U.S. Patent No. 10,829,623, awarded Nov. 2020) and subsequent patent pending. Resourceful, innovative, and dedicated to team success.

EXPERIENCE

- 2023-Present **HDR** Anchorage, AK
Data Science Engineer, PE
- Developed key data science deliverables for 30 projects, cumulatively representing \$62.2 million in HDR revenue (gross), supporting client infrastructure across 17 US states.
 - Conceptualized and developed HDR's first generative artificial intelligence tool to power client facing work with a 175x increase in speed, a 150x decrease in cost and a 36% improvement in accuracy over manual work.
 - Designed custom cloud-based dashboards to help win two key pursuits representing \$1.15 million in direct HDR bookings.
 - Provided analysis of datasets up to a quarter billion rows with Python and Power BI.
 - Co-leader of HDR's National Data Analytics Practice Group (145 members), hosting monthly meetings to promote education and collaboration among data practitioners across HDR.
- 2018-2023 **HDR** Anchorage, AK
Civil Engineer-in-Training
- Created business intelligence framework for infrastructure asset management - presented to clients nationally and adopted for HDR project delivery and marketing deliverables around the country.
 - Leader of national Power BI User Group (34 members), to promote education and collaboration across HDR.
 - Served as project manager for five Alaska projects, including two sole-source asset management projects.
 - Technical engineering work including design support for two Arctic Ocean reverse-osmosis desalination facilities and hydraulic design of Seattle's critical 440 million gallon-per-day West Point pump station.
 - HDR Pathfinder awards (2019, 2022).
- 2009-2018 **PREVIOUS EXPERIENCE** Various
Professional Ski Racer (2012-2018), CH2M Hill Mechanical Engineering Intern (2009-2011)
-

SKILLS AND CERTIFICATIONS

- Integration of engineering processes with advanced data science tools.
 - Data extract, transform, and load (ETL), dataflow optimization, data pipeline construction, relational data modeling, data visualization, dashboard development, and workflow automation.
 - Software expertise: Microsoft Power BI, Microsoft Power Query.
 - Programming languages: Python, Dax, M.
 - Certifications: P.E.
-

EDUCATION

- 2020-2021 **TUCK SCHOOL OF BUSINESS AT DARTMOUTH** Hanover, NH
Next Step: Transition to Business (Management Certificate Program)
- 2008-2012 **THAYER SCHOOL OF ENGINEERING, DARTMOUTH COLLEGE** Hanover, NH
B.E. in Engineering, Mechanical Design
- Dartmouth Society of Engineers Prize Recipient - Top senior design project.
 - Francis L. Town Scientific Prize - Top Dartmouth engineering student after the sophomore year.
- 2008-2012 **DARTMOUTH COLLEGE** Hanover, NH
A.B. in Engineering Sciences, High Honors, Magna Cum Laude, GPA 3.88/4.0
- Captain, Dartmouth College Ski Team, 3x NCAA D1 All-American.
 - Phi Beta Kappa honor society, Tau Beta Pi engineering honor society, Vice President NH-B chapter.

GEORGE HAWKINS ESQ.

FOUNDER AND CEO



EDUCATION

- JD, Harvard Law School, *cum laude*
- AB, Princeton University, *summa cum laude*

CERTIFICATIONS

- Member of the Bar of Massachusetts and the District of Columbia

PRESENT INDUSTRY ASSOCIATIONS

- Board of Directors, North American Electric Reliability Corporation
- Strategic Advisor, Xylem, Inc.
- Convener and Chair, Water Leaders Innovation Group
- Governor's Appointed Public Member, New Jersey Clean Water Council
- Advisory Board, Water Finance Exchange, Fund to support improvements in small and rural water utilities
- Advisory Board, The Water Network, International platform to support peer-to-peer learning
- Advisory Board, Quantified Ventures, For-profit enterprise focused on deploying environmental impact bonds
- Advisory Board, DigDeep, a non-profit providing assistance to underserved communities worldwide
- Advisory Boards, New Jersey Sustainable State Institute, New Jersey Center for Government Services
- Member, National River Steering Committee, American Rivers, helped author the "Citizens' Agenda for Rivers"
- Trustee, Green Faith, Inter Faith Partners for Environmental Quality
- Founder, New Jersey Council of Watershed Associations and Natural Lands Network

PAST INDUSTRY ASSOCIATIONS

- Appointed by President Obama, National Infrastructure Advisory Council
- Board of Directors, US Water Alliance
- Board of Directors, National Association of Clean Water Agencies, Chair Finance Task Force
- Board of Directors, District of Columbia Business and Industry Association
- Co-Chair with DC City Administrator, Mayor's Task Force on Flooding
- Trustee, DC Water and Sewer Authority

PRESENT EXPERIENCE

MOONSHOT MISSIONS, Bethesda, MD

Founder and CEO | January 2018 - Present

- Founder of consulting firm focused on public sector leadership and innovation with a focus on driving change and implementing technologies that can deliver better service at lower cost.
- Delivers advice to firms seeking to understand, market and deliver products and services to water and other utilities.
- Provides strategic advice to executive leadership seeking to accomplish organizational change and sustainability.
- Assists underserved communities to embrace technologies and management approaches that can reduce costs to ratepayers, improve services and protect water quality and achieve sustainability.
- Delivers replicable modules of proven technologies and management approaches, using past experience.
- Provide trusted guidance and support, including model documents and financial plans.

XPV WATER PARTNERS, Toronto, Canada

Executive in Residence | March 2018 - Present

- Help XPV Portfolio Companies understand and market to the public utility market.
- Help XPV Portfolio Companies scale up their operations to improve performance and profitability.

PRINCETON UNIVERSITY, PRINCETON ENVIRONMENTAL INSTITUTE, Princeton, NJ

Lecturer | December 1999 - Present

- Appointed to the School of Public and International Affairs.
- Teach Environmental Law and Policy, a course regularly graded as one of the best in the Princeton Environmental Institute.
- Selected to help teach the "Masters Class on Teaching and Lecturing" to Masters and Ph.D. candidates

PAST EXPERIENCE

DC WATER, Washington, DC

Chief Executive Officer and General Manager | October 2009 - December 2017

- Chief executive of one of the nation's largest water utilities, providing wastewater, storm water and/or water services to more than 2.2 million people in a 750 square mile service area in the District of Columbia and metropolitan Maryland and Virginia.
- Served a diverse 22-member Board of Directors, including executives from the District, Montgomery and Prince George's counties (MD) and Fairfax County (VA). Delivered a monthly report card that describes financial and operational performance. Collaborated with the Board to develop the "Blue Horizon 2020" strategic plan – with goals linked to champions, performance metrics, and annual budgeting. Blue Horizon has become a model for utilities and other agencies.

- Achieved budget surpluses in eight years on an operating budget of \$4-550 million and a capital program of \$5-600 million. Issued more than \$2 billion in taxable and tax-exempt bonds. Achieved a credit upgrade to AAA from S&P's, a rare stand-alone credit with this highest rating. Also achieved the highest rating for our green bonds at E-1 from S&P and GB-1 from Moody's.
- In 2014, issued the nation's first municipal century bond (100-year maturity) that is also the first green bond certified by a third party. Secured over \$1.1 billion in orders driving down yield by 25 basis points, saving ratepayers over \$15 million. In 2016, issued the world's first environmental impact bond to fund green infrastructure, sharing risks and rewards with impact investors.
- Attained eight years of record rate increases – from 7.5 to 18% – by adopting a strategy that includes talking to customers at annual town halls hosted with ward council members. Decoupled significant revenue from volumetric use by instituting a range of fixed charges. Instituted a rate structure to support low-income customers and encourage conservation.
- Created and Chair “Blue Drop” - a utility-first affiliate of DC Water to market products, services and expertise developed at DC Water to other utilities – benefiting utility ratepayers in both communities.
- Overhauled the utility's branding and marketing, adopting DC Water as a new business name with the tag line “Water is life.” Transformed one of the worst customer service agencies to one of the best in the District. Engaging a social media program linked to innovative advertising and customer taste challenges to highlight public drinking water, including the “Tap It’ program with an app to identify hundreds of places to refill reusable water bottles.
- Achieved stunning turn-around with local and national media. From a drumbeat of bad press, now attain regular positive media, including profiles in the NY Times, USA Today and the Washington Post and positive stories in print, web, radio and television.
- Driving tangible improvements to morale of the 1,200 workforce through the “Team Blue” ground-up organizational development effort, while successfully renegotiating two four-year collective bargaining agreement with five unions.
- Strengthened regional collaboration on the Board, highlighted by the completion after a ten-year negotiation of the 2012 Inter-Municipal Agreement (IMA) that provides funding for Blue Plains, the world's largest advanced wastewater treatment facility.
- Driving a world-class research and innovations program that has generated patents and technological improvements, linked with the first arrangements in the industry to commercialize products in sole and open-source arrangements with private companies. Typically have 20-30 Ph.D. research projects being undertaken in concert with universities and engineering firms.
- Drove from worst to first in responding to fires (built a GIS system identifying the location and status of every fire hydrant) and in responding to threats from lead (invited in lead activists who had been ardent critics to help improve our program and outreach materials). DC now achieves one of the highest national ratings for fire insurance and is complimented publicly by lead activists.
- Led innovations on energy and storm water, including North America's first and world's largest CAMBI digester project to produce 13 megawatts of green power, and an unprecedented reopening of a Consent Decree to modify the \$2.6 billion Clean Rivers project to build Green Infrastructure to capture rainwater, improve air and water quality and provide local green jobs.
- Created the DC Water Works! Program to encourage local job development and hiring. Oversee one of the best procurement programs to help Women and Minority businesses in the country, according to USEPA.
- Partnering with Xylem, Suez, IBM, and others to become a flagship “Smart Water” utility, building off the first installation of smart meters in the country. Initiated the country's first HUNA (High Use Notification Alert) for customers.
- Report on response time, permit issuance, accounts receivable and payable goals that rival or exceed private company standards.
- Retained top talent in executive team including Chief Engineer and Assistant GMs for Blue Plains and Customer Operations, while recruiting from New York, Philadelphia, Cincinnati and St. Louis for General Counsel, CFO and CIO and COO.
- Attained a range of international and national awards, and now a spokesman for the industry and writer and speaker to audiences worldwide – including frequent testimony before US Congress.

AMERICAN UNIVERSITY, SCHOOL FOR PUBLIC AFFAIRS, Washington, DC

Professor in Practice | May 2018 - September 2019

- Developed new course focused on the evolving importance of water in North America in the context of climate change. Created second course titled “Coming to the Metropolis” which focuses on the range of issues that come with rapid urbanization – including housing, transportation, green infrastructure, energy use, air quality, water quality and supply, and infrastructure.
- Working with the AU Executive Key program to consider the development of professional training programs to support state and local officials – with an emphasis on infrastructure agencies.

DISTRICT DEPARTMENT OF THE ENVIRONMENT, Washington, DC

Director | May 2007 - September 2009

- First permanent Director of the newly formed Department - \$130 million budget and 320 full time positions. Responsible for all city, county, and state functions, including regulations and enforcement, development reviews, resource protection and energy.
- Launched the Mayor's Green Team, an interagency initiative with 70 appointed representatives from 45 District Agencies. Coordinated more than 170 initiatives, accessible to the public at a new website Green.DC.Gov.
- Launched the Mayor's green collar jobs program; followed by leadership of a comprehensive program for 5000 at-risk youth during "DC Green Summer" which combined clean-ups, recycling, energy efficiency outreach and career training for youth.
- Chair of the Green Building Advisory Committee, responsible for the Green Building Act, which requires all new District buildings to be LEED-Silver. Reviewed codes and regulations that govern design, construction, operation, and maintenance.
- Chair of Sustainable Energy Utility, the nation's first city-wide energy company. Updated policy to include energy star benchmarks and a commitment to 20% renewables by 2020. Oversaw the nation's best low-income heating assistance program.
- Directed the District's response to the risk of lead poisoning to children, including orchestrating a restructuring of lead laws to create pro-active inspection program, enabled the first enforcement cases for lead poisoning in the District's history.
- Restructured management approaches including opportunities for internal promotions, career paths, and a formal innovations program for staff. Recruited a new management team including 60 new hires in the professional staff.

NEW JERSEY FUTURE, Trenton, NJ

Executive Director | December 2004 - May 2007

- Executive Director of the state's oldest and largest Smart Growth organization, which supports statewide laws and policies that encourage economic development that embraces environmental and community values.
- Restructured the organization to focus on redevelopment of urban areas, including launching the Redevelopment Forum – now the largest statewide forum on urban revitalization, with focus on affordable housing, and transit-oriented development.
- Launched the "Route 1 Progress through Partnership" effort with Governor's Office of Economic Growth to focus government programs to support new growth and housing in the Route 1 corridor in transit-oriented development.
- Released the "Four Ways to Genuine Prosperity" – an agenda to strengthen the economic and ecological vitality by urban redevelopment, conservation, transportation planning and tax reform. Launched the "Jersey Homes, Jersey Jobs" – to focus subsidies and tax policies to promote housing, including affordable housing, in mixed-use, transit-oriented neighborhoods.

STONY BROOK MILLSTONE WATERSHED ASSOCIATION, Pennington, NJ

Executive Director | December 1997 - November 2004

- Executive Director with mission to preserve water quality and the environment surrounding the busy Route 1 corridor in central New Jersey. Developed strategic plan to combat sprawl and promote Smart Growth.
- Expanded the enterprise to become the largest private watershed association in the country – expanded staff from 6 employees to 30, with an additional 20 seasonal staff, supplemented with thousands of volunteers. Quintupled the annual budget to over \$2 million and achieved a year-end budget surplus for seven straight years.
- Restructured operations to include a) education programs for more than 10,000 adults and children; b) watershed program which includes water monitoring, municipal zoning assessments, and River Friendly land use programs; c) an 825-acre reserve; and d) the Natural Lands Network, a group of more than 60 local groups.
- Launched and funded the GIS Center at the Watershed, the New Jersey Council of Watershed Associations, and the NJ Watershed Institute, to provide statewide assistance to citizens seeking to protect natural resources in their neighborhoods.
- Participated in more than 2,000 local meetings and hearings, leading to changes to zoning ordinances in 20 municipalities.

NATIONAL PERFORMANCE REVIEW, Washington, DC

Representative | February 1997 - November 1997

- Member representative from U.S. EPA.
- Championed for regulatory reform, partnerships, and customer service.
- Created a template to integrate environmental and economic support to protective land use decisions in critical river watersheds.

US ENVIRONMENTAL PROTECTION AGENCY, REGION I, Boston, MA

Senior Advisor and Special Assistant to Regional Administrator | September 1994 - January 1997

- Managed innovation projects including Project XL (flexibility for alternative approaches); StarTrack (regulatory relief for certified performance); and CLEAN (pollution assessments for small companies in return for beyond compliance performance).

Assistant Regional Counsel/Senior Assistant Regional Counsel | October 1992 - August 1994

- Managed Superfund cases, including a party search involving 1000 information requests, 2000 boxes of information and over 100 interviews.
- Developed strategies including the Design Accelerated Remedial Target that are now standard at USEPA.

ROPES & GRAY, Boston, MA and Washington, DC

Associate | Summer 1986, 1988 - 1992

- Principle areas were in counseling and litigation, including Superfund, Clean Water Act permit review, due diligence and environmental management.
- Worked on transactions (M&A) and litigation (drug testing, securities violations).

SELECT AWARDS AND HONORS

- Top 20 Transformational Water Leaders Worldwide, public and private sectors, Global Water Intelligence, 2021
- Distinguished Service Award, National Association of Clean Water Agencies, 2018
- Ronald F. Kirby Award for Collaborative Leadership, the Metro Washington Council of Governments, 2017
- Water Leader of the Year, Water Finance and Management Magazine, 2017
- "George S. Hawkins" scholarship for Water Utility Leadership established, Water Environment Federation, 2017
- Top Ten, Hundred Most Influential Local Government Officials, ELGL, (#6) 2016, (#2) 2017
- May 2017 – "Abel Wolman" Award for Water Innovation and Leadership, Chesapeake Water Environment Association, 2016, 2017
- Honorary Member, Association of Environmental Engineers and Scientists, 2017
- US Water Prize – the highest US water award, 2016
- Public Official of the Year, Water Environment Federation, 2016
- Public Official of the Year, Governing Magazine – one of eight nationwide, first utility executive, 2014
- Business Leader of the Year, DC Chamber of Commerce, 2014
- "George W. Fuller" Award for Leadership and Innovation from the American Water Works Association, 2014
- National Environmental Leadership Awards, National Association of Clean Water Agencies, 2012, 2018
- Environmental Leadership Award from the Alliance for the Chesapeake Bay, 2011
- Living Legend Award, National Capital Living Classrooms, 2010
- Best New Hire, Washington City Paper, for General Manager of DC Water, 2009
- Jack Gleeson Award for Conservation Service, Friends of Hopewell Valley Open Space, 2005
- New Jersey Planning Organization Award for Planning Excellence for its "Municipal Excellence Project", 2004
- "Ruth Patrick" Award for Excellence in Environmental Education, Water Resources Association, 2002
- Statewide Watershed Excellence Award, New Jersey Department of Environmental Protection, 2000
- U.S. EPA Silver Medal Award for work on RESULTS performance tracking system, 1997
- Vice President Gore's Hammer Award for work on StarTrack beyond compliance program, 1996
- Featured in "The Best Kept Secrets in Government" by Vice President Gore and NPR, 1996

PAUL D. BISHOP, CAE

1217 Scenic Circle • West Des Moines, Iowa 50265 • pdbishop27@gmail.com • (515) 554-4006

EXECUTIVE MANAGEMENT

Visionary Servant Leadership • Strategic Planning • Brand Enhancement • Board Development

PROFESSIONAL EXPERIENCE

Water Professionals International, Urbandale, Iowa • 2008-Present **President and Chief Executive Officer**

Direct all operations of a dynamic, \$4M international association of public health and environmental certifying authorities. Oversee visioning, finances, business development, marketing, operations, human resources, and administrative affairs. Execute the strategic plan and initiatives of the WPI Board of Directors and Commission for Environmental Professionals to support the mission and objectives of a diverse membership. Cultivate strong relationships with public officials, government agencies, and international partners to secure new members, clients, and business opportunities. Provide leadership for 9-person staff and extensive volunteer network.

IOWA STATE UNIVERSITY (ISU) FOUNDATION, Ames, Iowa • 2007-2008 **Director, Development**

Spearheaded fundraising efforts to raise \$5-10M annually for critical projects that support the university's strategic extension plan. Developed, coordinated, and communicated all aspects of high-priority projects. Created comprehensive case statements conveying ISU extension priorities to cultivate strong relationships with public and potential donors. Established and maintained relationships with key administrators and faculty members to facilitate fundraising initiatives. Served as a member of the Vice President of Extension's executive cabinet.

THE JUVENILE DIABETES RESEARCH FOUNDATION (JDRF), Des Moines, Iowa • 2002-2007 **Executive Director, Greater Iowa Chapter**

Oversaw day-to-day operations for three Iowa offices of the charitable foundation that funds and advocates for juvenile diabetes research worldwide. Directed nine events in addition to corporate, foundation relations, and major gifts programs while managing 10 staff members and an annual budget of \$3.6M.

THE BISHOP ADVANTAGE, Des Moines, Iowa • 2000-2002 **President**

Built and managed a consulting and bipartisan government relations firm. Counseled clients on government relations, political action committee development, and strategic corporate planning. Served as a lobbyist and advocate on local, state, and federal healthcare related issues. Coordinated association and political initiatives for clients in cooperation with local, state, and federal elected officials, as well as other associations and organizations.

IOWA MEDICAL SOCIETY (IMS), West Des Moines, Iowa • 1993-2000 **Manager, Legislative Affairs / Director, Iowa Medical Political Action Committee (IMPAC)**

Operated as chief lobbyist for a professional medical association to ensure quality health care in Iowa. Served as an advocate for physicians and patients at the state capitol as well as in Washington, D.C. Coordinated legislative and grassroots activities to handle state and federal issues. Authored legislative, public policy, and political articles. Created and implemented fundraising and marketing plans for IMPAC, recognized as one of the nation's Top 10 political action committees for state medical societies. Trained, educated, and deployed IMS physicians and clinic managers to foster political awareness throughout the state.

Ameerah Palacios, APR, CTA, MBA

Award-winning, national communications executive

EDUCATION

PROJECT MANAGEMENT PROFESSIONAL

Project Management Institute (July 2024)

ACCREDITATION IN PUBLIC RELATIONS

Public Relations Society of America

November 2013

THE COLLEGE OF SAINT ROSE

Master of Business Administration

August 2009

WESTERN KENTUCKY UNIVERSITY

Bachelor of Arts, Mass Communication

December 2005

CCSA

London Program. Global News & World Media Cultures, 2004.

KANSAI GAIDAI UNIVERSITY

Japanese Language Program, Journalism,

Film, Media Effects, 2003

EXECUTIVE PROFILE

- Public sector leader with 18+ years of experience and expertise in communications, marketing research, community education, partnerships and advocacy
- Dynamic team leader, educator and trainer
- Former business journalist, TV news producer, PIO/Spokesperson

LEADERSHIP STYLE

- Collaborative, service-oriented strategic planner
- Gallup Strengths: Relator, Focus, Significance, Individualization, Learner
- ESFJ: Extraverted - Sensing - Feeling - Judging - Assertive

COMMUNITY LEADERSHIP

- Public Relations Society of America - Bluegrass Chapter APR Chair
- Summerbridge Louisville Board of Directors
- Louisville Downtown Residents Association - President
- Parks Alliance of Louisville Board of Directors
- AWWA KY/TN Chapter Board, Customer Service Committee Chair
- WKU Potter College of Arts and Letters Advisory Council

PR LEADERSHIP (2011-NOW)

HDR

Senior Strategic Communications Lead

2020-Present

GREATER LOUISVILLE INC. -

Director of Marketing and Communications

2019 - 2020

METRO NASHVILLE PUBLIC SCHOOLS

Marketing and Program Manager

2015 - 2019

ROXBURY PUBLIC SCHOOLS

Community Relations / School Director

2012 - 2015

ST. ANDREW'S RESOURCES FOR SENIORS SYSTEM

Corporate Communications Manager

2011 - 2012

NEWS CAREER (2002-2010)

WNYT-NBC

WKCT-AM

Bowling Green Daily News

WBKO-ABC

WWHR-FM

KDKA-CBS

WKYU-NPR

The News Gazette

KSDK-NBC

WKYU-PBS

PROFESSIONAL SKILLS

Advocacy
Elected Official
Engagement

Brand Strategy

Budgeting

Business Evaluation

Campaign Design

Certified Tourism
Ambassador

Community Education
Programming

Crisis Response &
Resiliency Planning

Editorial Writing
Executive Counsel

Facilitation

Gallup Strengths Coach

Google Analytics

Livestreaming

Measurement

Media Relations

Operations Leadership

Supervision

Training

Video Production

SOFTWARE COMPETENCY

Basecamp

Cision

Constant Contact

Emma

Google Analytics

Google Tag Manager

GovDelivery

Hootsuite

IFTTT

Mailchimp

Project 5

Sharepoint

Sprout Social

Squarespace

Wordpress

Zapier

Zoho

CONNECT

📞 502-475-0460 ✉️ ameerahpalacios@ameerahpr.com 🐦 @IAmAmeerah 🔗 [LinkedIn.com/in/Ameerah](https://www.linkedin.com/in/Ameerah)

CHRONOLOGICAL RESUME

PR LEADERSHIP(2011 TO NOW)

2020 to Present | HDR, Senior Strategic Communications Lead, *National*

- Grew the regional communications program from zero to \$500,000 in less than 2 years.
- Build and grew the national LCRR Communications Initiative to book \$1 million in standalone communications work in 2022. Grew the program to surpass \$2 million in 2023 bookings.
- Lead and deliver communications strategy services for public sector construction and infrastructure projects working with multi-disciplinary teams and channels, collaborating in both content and technical development.
- Create and implement communications plans that include target audience strategies, marketing and advertising plans, event planning, and collateral material development and plan implementation, researching new technologies and trends, pushing clients and the team to innovate.
- With a deep understanding of NEPA and how infrastructure projects are developed under these guidelines, facilitate community outreach for public meetings, public hearings, open houses and other meetings with the public, clients and other project stakeholders.

2019 to 2020 | Greater Louisville Inc., Director of Marketing and Communications, *Louisville, KY*

- Led teams to implement GLI's digital and social media strategy, events, advertising trade, video design and production with a \$1 million budget.
- Served as spokesperson and point of contact for media relations.
- Coached senior leadership to elevate the GLI brand, writing all talking points and defending reputation.
- Managed editorial calendar and regularly submit opinion articles and letters to the editor.
- Served as executive editor for GreaterLouisville.com and GLI publications.

2015 to 2019 | Metro Nashville Public Schools, Marketing and Program Manager, *Nashville, TN*

- Led external and internal communications projects for the 41st largest school district in the U.S. and 12,000 employees focusing on school marketing, media relations, crisis communication, website management (160+ properties), social media, teacher recruitment marketing, content program development, events and community engagement.
- Collaborated with the Family Information Center, the Department of Family and Community Partnerships, Central Office executives and school principals to keep parents and the community informed and engaged.
- Coordinated and led special project teams.
- Led MNPS Website Redesign Project, a two-year, \$300,000 project that impacted every school, every teacher and employee in the district.
- Managed and planned MNPS Academies of Nashville Career Exploration Fair, the district's largest public event with 500 business partners, 40 high schools, government officials, 5,000+ students, MNPS executives and teachers.
- Parent application downloads of the Parentlink app (both Apple and Google) exploded from 0 to 33,000 thanks to my targeted Facebook button call-to-action campaign and integration of the Parentlink app on the Quick Guide and Contact Us page of MNPS.org.

2012 to 2015 | Roxbury Public Schools, Community Relations/School Director, *Succasunna, NJ*

- As communications director for the Roxbury Township School District, delivered public relations, media relations, internal and external stakeholder communications, crisis communication, marketing campaigns and social media management for six schools within the system.
- As director of the Roxbury Community School, a nonprofit focused on academic and enrichment programs and events for the 25,000 families and adults within Roxbury Township area, oversaw a budget of \$300,000, 50+ programs, events and seasonal employees.
- Served on district committees for the township, special events, technology, and many more.

2011 to 2012 | St. Andrews Resources for Seniors System, Corporate Communications Manager, *St. Louis, MO*

- Responsible for the successful internal communication, external communication and marketing for all 20+ STAMS/STARSS communities, with a total marketing budget of \$6 million.
 - Developed public relations, marketing strategies and media relations contacts.
 - Created value as a consultant to communities on marketing, advertisement management/negotiation.
 - Oversaw all social media and website development for retirement communities and overall company.
 - Managed web development specialist.
 - Implemented ROI-driven creation and management of marketing/communications strategy, press kits, press releases/advisories, pitches, press events, collateral creation (brochures, flyers, newsletters, email templates, presentations, letters, speeches), social media influencer outreach, and reputation management.
-

NEWS CAREER (2002-2010)

2009 to 2010 | **The Daily Gazette**, Business Reporter, *Schenectady, NY*

- Reported daily on business issues within a six-county region in upstate New York, including banking, real estate, retail, health insurance, the Internet, e-commerce, manufacturing, bankruptcy court and federal civil court cases.
- Provided news updates for the newspaper's Web site, dailygazette.com.
- Developed the vision and story ideas for Outlook, an annual insert magazine that focuses on local business trends.
- Wrote in AP Style and used social media for crowdsourcing/story development.
- Created podcasts and shot/edited videos for interviews with digital cameras for online versions of stories.

2008 to 2009 | **WNYT-NBC**, Television News Producer, *Albany, NY*

- Coordinated and managed reporters, editors, technical staff, satellite interviews/feeds, live shots with ENG and SNG trucks, photos, tweets, live interviews and other content to produce television newscasts.
- Designed graphics used in newscast with Lex and Thunder programs.
- Wrote print-style stories for wnyt.com with graphics.
- Completed some production work with camera and graphics.
- Filled in as assignment editor and webmaster as needed.
- Wrote in AP Style and used social media for crowdsourcing/story development.

2006 to 2008 | **Bowling Green Daily News & WKCT-AM**, Business Reporter & News Anchor, *Bowling Green, KY*

- Was the 2008 Kentucky Small Business Journalist of the Year
- Made contacts, beat calls, and turned facts/stats into concise stories with everyday characters. Investigated consumer issues.
- Anchored and reported on radio newscasts and short updates.
- Tracked economic development (mergers/acquisitions, emerging trends, employment, small business).
- Wrote weekly business column, personal finance series, news and business beat stories.
- Wrote in AP Style and used social media for crowdsourcing/story development.
- Created podcasts.

2005 to 2006 | **BGHRC/WBKO-ABC**, Public Affairs Talk Show Host & TV Producer, *Bowling Green, KY*

- Produced and hosted a 30-minute public affairs talk show that aired on WBKO-ABC; wrote promotional messages for show.
- Managed guest booking and coordination, video, graphics and overall editorial content.
- Wrote, produced, and starred in PSAs for the BGHRC, both in English and Spanish.
- Executive video and graphics production.

2003-2005 | **WKU NewsChannel 12/WKYU-PBS**, Team Reporter/Anchor/Production Team, *Bowling Green, KY*

- Reported, produced, edited, anchored, and executed other production-related duties for a 30-minute student-run newscast broadcasted 3 nights a week.
- Wrote in AP Style and used social media for crowdsourcing/story development.
- Used Avid and Final Cut Pro digital editing tools.

2002-2005 | **WWHR-FM**, Anchor/Reporter, *Bowling Green, KY*

- Reported, produced and anchored radio stories as needed for student-run radio station using AP Style, social media and Cool-Edit digital audio tools.

Summer 2003 & 2004 | **KSDK-NBC, KDKA-CBS**, News and Assignment Desk Intern, *St. Louis, MO and Pittsburgh, PA*

PRESENTATIONS

- 2023 Clean Water Professionals Conference, "Tools to Deal With Irate or Challenging Customers."
- 2023 Clean Water Professionals Conference, "About the Risk of Lead in Drinking Water."
- 2023 Rogue Water Lab - Rural Community Assistance Partnership, "Waterproofing your Communications."
- 2023 North Dakota Rural Water Conference, "Lead Communications Guide and LCRR Best Practices."
- 2023 Water Research Foundation Presenter, Risk Communication Workshop, Philadelphia Water.
- 2023 American Water Works Association Conference, "Taking the Lead on Lead: LCRR Communication Best Practices and Guide."
- 2022 Clean Water Professionals Conference, "Implementing AMI in Louisville."
- 2021 Clean Water Professionals Conference, "Preparing for Biden-Era Policy Pivots with Utility Management Perspectives."
- 2019 Oregon School Public Relations Association, Annual Conference, "Diversity, Equity and Inclusion - Creating Welcoming Spaces for Families" - Keynote Speaker.
- 2019 Oregon School Public Relations Association, Annual Conference, "Engaging Introverts: Tips and Case Studies for Making Your Schools and District Events Engaging and Inclusive of Diverse Groups," Workshop Leader.
- 2019 National School Public Relations Association National Seminar, "Creating Equity and Engagement Through Parent Feedback Systems."
- Summer 2019, Pasco County Schools, Business Partnership Professional Development Workshop Leader.
- Spring 2019, Career Exploration Fairs 101, Nashville Hub Study Visit Workshop.
- 2018 Council of Great City Schools Public Relations Executives Conference, "Student Ambassadors: Telling the District Story with Student Leaders."
- 2018 Ford Next Generation Learning Conference, "Marketing: The Ford NGL Secret Sauce."
- 2017 and 2018 PRSA Nashville APR Workshop, "Best Practices in Implementation."
- 2014 National School Public Relations Association National Seminar, "The One-Person PR Department: Tools You Can Use and the Skills You Need."
- 2014 Twitter Chats for Education Course: Using Twitter Chats to Engage in the Classroom.
- 2014 Workshop, "Facebook Tools and Tips for Municipalities."
- 2013 Roxbury High School Journalism Conference, "Using LinkedIn to Showcase Your Brand."
- 2007 WKU High School Journalism Workshop, Participating Lecturer on Trends.
- 2003 Script Writer, Bowling Green Visitors and Convention Bureau, Historic Figure Series, "Reuben Crowdus Comes Home: An adaptation of the life of Bowling Green's Father of Ragtime."

MEMBERSHIPS AND AWARDS

- 2023 dotCOMM Gold: LouisvilleWater.com Website Redesign.
- 2023 W3 Silver: General Websites-Services & Utilities, Louisville Water Company Website.
- 2023 PRSA Landmarks of Excellence Awards (Award of Merit), Website - LouisvilleWater.com.
- 2023 Pathfinder Award (HDR) - Collaboration.
- 2022 Pathfinder Award (HDR) - Community Service.
- 2022 PRSA Landmarks of Excellence Awards - Public Service Communications & Video Shorts. Louisville Water.
- 2020 Pathfinder Award (HDR) - Virginia Department of Transportation Website Redesign Project.
- 2019 National Chamber Innovation Award - Year of Tech Marketing Campaign.
- 2018 National School Public Relations Association "35 Under 35".
- 2018 IABC Music City Gold Pen Award - Learning and Imagination at Play: Early Childhood Education Marketing.
- 2018 NSPRA Award of Excellence - MNPS Planning and Construction: Engaging Stakeholders.
- 2018 NSPRA Award of Excellence - The Academies of Nashville: A National Transformational Model.
- 2018 NSPRA Award of Merit - Academies of Nashville Annual Report - 10 Years of Excellence.
- 2018 NSPRA Award of Honorable Mention - MNPS Virtual School Website.
- 2016-2019, Member, Nashville PRSA chapter, Accreditation in Public Relations & Program Committee (2017-2019)
- 2014-Present, National APR Facilitator.
- 2012-Present, Member, National School Public Relations Association. NJSPRA chapter APR chair (2015).
- 2015 NJ School Public Relations Association Awards, Special Interest Publication - Hello Roxbury Employee Newsletter, recognized 2nd Place (statewide).
- 2012-Present, Member, Public Relations Society of America. Accredited in Public Relations (APR) since Nov. 2013.
- 2012 St. Louis Business Journal's "30 Under 30" Nominee.
- 2008 U.S. Small Business Administration Kentucky Small Business Journalist of the Year.
- 2007 WKU President's Award for Diversity.
- 2006 Bowling Green Human Rights Commission Young Woman of the Year Nominee.
- 2005 Kentucky Associated Press Student TV News Competition, 1st Place.

Certificate of Accreditation



Ameerah Palacios

having exhibited an exemplary standard of character and a general fitness for the profession; having demonstrated a high level of competence in the practice of public relations over the prescribed period of time; having successfully passed the written and oral examinations required; and having evidenced a real interest in the development and growth of the public relations profession, is accordingly granted this Certificate of Accreditation by the Universal Accreditation Board.

November 2013


Susan A. Barnes
Universal Accreditation Board Chair

Satish Tripathi, P.E., Ph. D. Candidate

Email: er.satish7@gmail.com

Phone: 832-803-6751



SUMMARY AND QUALIFICATION

- Innovative and Strategic Thinker, Output Oriented, Team Player, Customer Service Oriented, and One Water Advocate
- Strong Analytical, Problem Solving, and Interpersonal skills with Sound Academic and Professional Knowledge
- Over 16 years of Experience in the Design, Modeling, and Planning of Water, Wastewater, and Drainage Systems
- Proven Manager for Transformational Leadership and Process Automation
- Well-informed about Emerging Technologies and have insights to incorporate into the process
- Risk Assessment & Financial/ Economic Evaluation of Civil Engineering Projects
- In-depth Knowledge of Local, State, Federal, and International Water Laws, Regulations, and Guidelines
- Proficient in Database Management and Visualization using Business Intelligence Software



SKILLS

- Data Analytics and Visualizations
- Process Automation
- Proficient in Microsoft Word/Excel/PowerPoint /Access; ArcGIS, AGOL, AutoCAD; INFO WORKS, WaterGEMS, HAMMER, EPANET, GAM, SWMM, MS Power BI, R, and Machine Learning/AI



EDUCATION/ TRAINING:

- Ph.D. in Water Resources Engineering, Texas A&M University, College Station (Ongoing/ GPA: 4.0/4.0); M Sc. in Water Resource Engineering; B.E. in Civil Engineering
- M.A. in Sociology (Major: Equity and Inclusion in Government-Led Project)
- TCEQ Wastewater Operator Training
- Economic & Financial Analysis: 7- days of Training (Provided by Asian Development Bank)
- “The 7 Habits for Managers: Essential Skills and Tools for Leading Teams” by American Management Association
- Duke Water Innovation Leadership Development (WILD) Program for 2022-2023



AWARDS AND HONOR

- Tommy E. Knight '61 Endowed Fellowship, 2017
- Gold Medalist, M Sc. in Water Resource Engineering
- Gold Medalist: B. E. in Civil Engineering
- Received Best Student Award (Nepal Bidhya Bhusan) from the President of Nepal
- “Young Engineering Poet of the Year” Award - 2011



SPECIAL TASK PERFORMED (City of Houston):

- Established Digital Twin Framework and prepared the “Smart Water Road Map”
- Automated “water/ wastewater capacity reservation process,” “water and wastewater capacity evaluation and tracking process,” and “Developer Participation Contract Process.”
- Built Integrated Platform as a Decision Support System for Water Planning Engineer
- Developed Eleven Tools (4-Artificial Intelligence Model) to Automate Existing Work Processes as a part of the Digital Twin Roadmap
- Prepared WWTP and LS Consolidation Plan, including Future Sewer Tunnel Network for the City of Houston
- Identified the “No-Discharge” option in Scott Wet Weather Facilities as a part of the Consent-Decree (CD)
- Identified Innovative Solutions to solve the Clinton Drive LS (400 MGD LS) Capacity Issue



PROFESSIONAL EXPERIENCE:

Managing Engineer, Houston Water Infrastructure Planning (Water Lead) (Aug 2020 – Present)

- Leading Water Infrastructure Planning Group
- Develop a Digital Twin Framework and “Smart Water Road Map.”
- Build, Maintain, Update, and Maintain Hydraulic Models for Water Distribution, Water Quality, and Water Purification Plants
- Develop short-term, mid-term, and long-term planning
- Develop CIP projects and coordinate with other service lines to improve operational and financial efficiency
- Coordination with Regional Water Authorities, MUDs, and Wholesale Customers for current and future water demand and required infrastructure development
- Manage Surface Water Rights and Coordination with other Stakeholders in the basin
- Build an Integrated Data Visualization Platform
- Build an Emergency Support System to make accurate, consistent, and on-time operational
- Manage Professional Service Contracts
- Prepare annual strategic goal and scope of work for sustainable & efficient team building
- Support and provide suggestions to the HWP Director and leadership team

Supervising Engineer, Utility Analysis, Houston Water, City of Houston (Nov 2018- July 2020)

- Drinking Water and Sanitary Sewer System Capacity Evaluation using Hydraulic models
- Issuing Water / Sanitary Sewer Capacity Reservation Letters (WCR) for Developers
- Review possible water contamination from Oil & Gas Project, including Oil and Gas Permit
- Coordinate the Developer’s Participation Contract Program for the projects where the City of Houston participates in the infrastructure improvements
- Coordinate consultants, council members, developers, and residents for the proposed infrastructure plan
- Prepare annual strategic goal and scope of work for the Engineering Support Team for more than 15 employees
- Monthly and yearly audit of performed tasks and present to City Council
- Prepare an annual and tri-annual budget for the group and Developer Participation Program
- Led “*Process Automation Initiatives*” and “*Smart Water Initiatives*” in the group
- Building Semi-Automated Dynamic Excel, Power BI, and GIS Tools for data processing and analysis

Engineer, Houston Water Planning, Houston Water, City of Houston, Houston

Jan 2013– 2018

Responsibility:

- Project Manager to provide Project management, coordinate, evaluate, & manage field support consultants for the wastewater flow monitoring, Lift Station monitoring & drawdown, Rain gauge monitoring, MH Inspection, and GPS.
- Manage, build, maintain, and update hydraulic models for the wastewater collection system service areas.
- Work closely with contractors to ensure work is delivered within schedule, and budget and check the quality of their work.
- Manage professional service Contract Documents, work order documents for consultants, and invoices review
- Long Term Planning and Capacity Assessment of Wastewater Collection & Treatment Facilities for Current/Future Flow
- Preparation of WWTP & Lift Station Consolidation Plan and WW Service Area Master Plan
- Sewer System Impact Analysis for WCR request from New Development/ Redevelopment/ MUD/CCN
- Prioritization, Ranking, and Recommendation of Projects for CIP
- Support on Budget Preparation
- Data Processing, Analysis, and Use (Rainfall data, Wastewater Operation data, etc.)

- Building Semi-Automated Dynamic Excel, Power BI, and GIS Tools for data processing and analysis
- Review of Consultant Work (PER); Provide Comments; Attend Progress / Pre-TRC/ TRC Meetings for Sewer Line/ Lift Station/ WWTP rehab/renewal/ replacement and consolidation
- Support Utility Analysis Group and City Engineer Office by providing wastewater system evaluation for Wastewater Capacity Reservation (WCR) of new development/MUD to ensure capacity availability; recommend/ review pipe sizing, and discharge point, and provided depth for future connection.
- Support Upper Management on Consent Decree (CD) negotiation by providing Wastewater System Data; Various Scenarios; Costs, and the Schedule of each Alternative Scenario
- Supervise and Train Graduate Engineers; Prepare HEAR Plan and training materials/tools

Water Resource Planning Engineer: Department of Electricity Development, Ministry of Energy, Nepal

June 2009 – 31st Dec 2012

Responsibility:

- River Basin Master Plan Preparation
- Surface Water Allocation among multiple user groups; coordinate meetings and involve in negotiation
- Planning, Preliminary Design & Analysis of Sunkoshi-2 Reservoir Project (1100 MW), Sunkoshi -3 Reservoir Project (536 MW), and Dudhkoshi Reservoir Project (230 MW)
- Flood & Draught Analysis and Flood Plain Mitigation Plan
- Programming for Optimization of Reservoir Operation using GAMS
- Financial / Economic Analysis/ Budget Preparation

Managing Director / Civil Engineer, CADS Consultancy & Hydro Research P. Ltd., Nepal

May 2006 – May 2009

Responsibility: (Hydropower Engineer for Seven Hydropower Projects)

- Manage technical and administrative team
- Coordinate and negotiate with upstream and downstream users
- Hydrological Modeling and Analysis of River Basins for Hydropower Projects using HEC-RAS; HEC-HMS, MIKE; ArcGIS
- Design of Hydraulic Structures (Headworks, Bank Protection Structures, Desander Basin, Open Channel and Pressure, drainage, Siphon, Surge Tank, and Powerhouse Design)
- Implementation of Innovative project “Drinking Water Collection from Fog” in the project area
- Organize and coordinate meetings with a regulatory body, design review committee, and council members (political representation)
- Conduct Public Hearings as a part of the Environmental Impact Assessment
- Prepare financial & feasibility reports for investors and bankers



ORGANIZATIONS

- Co-Lead, Digital Twin Architecture Group, Smart Water Network (SWAN)
- Member, Digital Twin Committee, American Water Works Association
- Member, Engineering, Modeling Committee, American Water Works Association
- Communication Director, Association of Nepalese American (ANA)
- Advisor, Smart City Initiatives for Nepal

Vel Subramanian, PhD, PE, BCEE, PMP, CCM, LEED AP

Project Director

Vel Subramanian is an accomplished technical expert and project manager with over 30 years of planning, design, permitting, and construction administration experience in water and wastewater treatment projects; project work has included wastewater treatment facilities, bio-solids processing facilities, pump stations, sewer collection systems, and water distribution systems. He has been involved in several plan upgrades including design process, process evaluations, plant layout and hydraulics, equipment sizing, treatability/bench-scale/pilot studies, detailed engineering, preparation of plans and specifications, life cycle cost analysis, operation and maintenance training, and plan setup. Dr. Subramanian is knowledgeable in the use of BIOWIN and other modeling software systems and has extensive experience developing both steady state and dynamic computer models. He is conversant with the permitting process and various federal and state regulations related to water environment.

Mr. Subramanian's selected project experience listed below:

Patuxent WRF Expansion Design Services During Construction, Anne Arundel County, Crofton, MD. Project Manager responsible for design services during the construction phase. The project involves the expansion of the Patuxent WRF from 7.5 mgd to 11.6 mgd. Critical project goals for this expansion project are: the Headworks Building and Influent Pumping; the addition of a third oxidation ditch, fourth secondary clarifier, and expand the oxidation ditch aeration system; the addition of three additional denitrification filters; the expansion of the existing UV system; the design of a supplemental aeration system; the addition of a fourth gravity thickener; the upgrade of the odor control system; optimize operating protocols; upgrade and expand the electrical distribution and emergency power generation facilities to provide reliable power to all new and existing facilities; plant-wide Process Control System (**Design & Construction Services: 2017 - 2019**).

Venice Gardens WRF Advanced Wastewater Treatment Alternatives Evaluations, Sarasota County Public Utilities, FL. Process Specialist responsible for evaluating alternatives for process modifications at the Venice Gardens WWTP to expand the existing 3 MGD secondary treatment facility to 5 MGD AWT facility. Performed statistical analysis of the data gathered for wastewater characteristics, set up the process model using BIOWIN, developed three process alternatives for achieving AWT standards. The evaluation also included preparation of conceptual site layouts, process flow diagram, hydraulic profile, construction cost estimates, alternatives selection and project delivery approach (**Design Services: 2021 - 2022**).

Central County WRF Advanced Wastewater Treatment Alternatives Evaluations, Sarasota County Public Utilities, FL. Process Specialist responsible for evaluating alternatives for process modifications at the Venice Gardens WWTP to convert the existing 8 MGD secondary treatment facility to AWT facility. Performed statistical analysis of the data gathered for wastewater characteristics, set up the process model using BIOWIN, developed three process alternatives for achieving AWT standards. The evaluation also included preparation of conceptual site layouts, process flow diagram, hydraulic profile, construction cost estimates, alternatives selection and project delivery approach (**Design Services: 2021 - 2022**).

Education

Ph.D., Environmental Engineering, Oklahoma State University, 2008

M.S., Civil Engineering, University of Oklahoma, 2002

M.E., Environmental Engineering, Anna University, 1989

B.E., Civil Engineering, Anna University, 1987

Registrations/licenses

Professional Engineer, Oklahoma, License # 20672.

Maryland, License # 38615.

District of Columbia, License # 907165

Virginia, License # 0402047552

Florida, License # 92506

Certifications

Board Certified Environmental Engineer (BCEE)

Leadership in Energy and Environmental Design Accredited Professional (LEED AP)

Project Management Professional (PMP)

Professional Affiliations

Water Environment Federation

American Academy of Environmental Engineers and Scientists

Virginia Water Environment Association



Vel Subramanian, Ph.D., PE
Project Director

Bee Ridge WRF Process Modifications, Sarasota County Public Utilities, FL. Process Specialist responsible for evaluating alternatives for process modifications at the Bee Ridge WRF necessary to meet Class V recharge well injection water quality requirements. Two alternatives considered for process modifications included converting the existing biological process into Modified Ludzack-Ettinger process and one alternative focused on modifying the existing effluent filters to denitrification filters. Performed statistical analysis of the data gathered for wastewater characteristics, set up the process model using BIOWIN, developed process alternatives and projected effluent qualities for several operational scenarios (**Design Services: 2019 - 2020**).

Altamonte Springs Regional WRF AWT Upgrades, Seminole County, FL. Process Specialist responsible for a process evaluation to determine the maximum plant capacity utilizing existing tankage, while still meeting the 5 milligrams per liter (mg/L) biological oxygen demand (BOD), 5 mg/L total suspended solids (TSS), 3 mg/L total nitrogen (TP), and 1 mg/L total phosphorous (TP) effluent limits. After performing process modeling using BIOWIN, recommendations were provided for a phased upgrade approach to reach the AWT treatment standards from 9.0-MGD to 12.5-MGD annual average daily flow (AADF) plant capacity by reconfiguration of the existing tanks to create additional anoxic and aerobic stages necessary for a 4-stage bardenpho process (**Design and Construction Services: 2017 - Ongoing**).

City of Leesburg Turnpike Wastewater Treatment Facility (WWTF), Lake County, Florida. As a Process Specialist, performed the process evaluation using the BIOWIN model to assess the effluent quality based on multiple scenarios for the Sequencing Batch Reactor (SBR) facility. The scenarios consisted of the current treatment process and expansion under the existing influent composition and under future influent loads and provided recommendations for potential alternatives and preliminary budgetary cost estimates for meeting reclaimed water total nitrogen (TN) levels of 10 mg/L or less (**Design Services: 2021**).

City of Canton WWTP Expansion to 6-MGD, Advanced WWTF, Canton, GA. Technical Lead for Process Mechanical team for the expansion of the City of Canton, GA's treatment plant to 8-MGD. The project involved the selection of a treatment process to achieve low-level effluent phosphorus limits while incorporating flexibility to achieve future total nitrogen limits. Work includes the preparation of a preliminary design report to document the process selection, biological and hydraulic design parameters and project delivery method. Upon review of the influent wastewater characteristics, site plan and long-term City objectives, the team worked with the City in concluding the existing plant will be converted to a membrane bioreactor (MBR). Additional project components include fine screening, biological nutrient removal, phosphorus polishing, UV disinfection, post aeration, new dewatering facility, solids storage, and drum thickening of waste-activated sludge (**Design and Construction Services: 2019 - Ongoing**).

Crest Avenue WWTF Capacity Expansion & Process Optimization, City of Winter Garden, FL. QA/QC Reviewer. The Project involves expanding the 4.75 MGD existing treatment facility from its 5-stage conventional biological process to 7.5 MGD 5-stage Membrane Biological Reactor (MBR) facility. The work includes upgrading the addition of new headworks, new equalization tank, reconfiguration of bioreactor basins, new MBR system, upgrades to sludge holding basin and disinfection system (**Design Services: 2021 - Ongoing**).



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Dissolved Air Flotation Thickener Design Services, Clark County Water Reclamation District, NV. QA/QC Reviewer. The project involves design, bid services, and construction services for a dissolved air floatation tank (DAFT) and polymer storage areas at the Flamingo Water Resource Center Wastewater Plant. The project includes the assessment of a number of existing plant treatment systems, as well as integration and tie-ins of the new facilities with the existing plant equipment while maintaining the plant's operation. The project is part of the plant upgrade and expansion to reach 150 MGD treatment capacity (**Design and Construction Services: 2020 - Ongoing**).

Anne Arundel County Professional Engineering Services – Water and Wastewater System, MD. Project Manager. Responsible for planning, design and construction administration of multiple water and sewer main projects. The recent water main project for the County involves design and development of the construction documents for 24-inch raw water transmission main for transporting 5 MGD of water from Broad Creek Wells BC-7 and 8 to Broad Creek WTPs. The project also involves alignment study for evaluating the existing conditions and developing most feasible alignment for the proposed water transmission main. The recent sewer main project involves the design and development of construction documents for the replacement of approximately 4,100 LF of 3" PVC low pressure sewer main for Selby Mayo area (**Design and Construction Services: 2017 - Ongoing**).

Selected Project Experiences Prior to 2017:

250 MGD Tunnel Dewatering Pump Station and Enhanced Clarification Facility District of Columbia Water and Sewer Authority, Washington, D.C. Project manager, design reviewer and submittal coordinator. As part of the Construction Management Services Team, responsible for the design and constructability of Design-Build 250 MGD Tunnel Dewatering Pump Station and Enhanced Clarification Facility for conveying and treating Combined Sewer Overflows captured in 23-foot diameter CSO tunnel during stormwater events to secondary treatment level. The major components of the project are Coarse Screen System and Surge Shaft, Tunnel Dewatering Pump Station, Fine Screening Facility, Grit Removal, High Rate Clarification (HRC) Tanks and Building, Chlorine Contact Tank (CCT), and ancillary facilities. The ancillary facilities include chemical system, combined aeration system, flushing water and drain pump stations, low head pump station and odor control system and electrical buildings

30 MGD El Paso Water Utilities (EPWU) Wastewater Treatment Plant (WWTP) Process Optimization, City of El Paso, TX. Process specialist responsible for process evaluation and modeling to identify cost saving opportunities for energy and chemical consumption by making modifications to the infrastructure and operational strategies at the treatment plant. This process optimization project focused on: reducing power and chemical costs; identifying components for replacement or upgrade that provide process improvements; identifying operational opportunities that could provide cost savings and improve process control; identifying energy conservation measures; and fostering a culture of effective energy and chemical usage and awareness.

25 MGD San Diego International Wastewater Treatment Plant (WWTP) Process Evaluation, San Diego, CA. Process specialist responsible for assessing the

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Project Director

existing activated sludge process at the SBIWTP, including aeration, clarification, and return and waste activated sludge withdrawal and pumping; to determine root cause for the effluent violations; and to develop cost-effective recommendations to improve effluent conditions at the SBIWTP so that they conform to permit requirements. The study addresses data review and analysis, modeling of existing and proposed conditions, screening of the potential alternative solutions, development and evaluation of selected modification alternatives, and a description of the recommendations for improvement, including estimated implementation costs and schedule.

Blower and Diffuser System Replacement at 12 MGD Fred Hervey Water Reclamation Plant, City of El Paso, TX.

Process specialist responsible for developing BioWin process model for evaluating oxygen demand and air requirement for several process configurations to optimize blower sizing. The project included evaluation, removal and replacement of the existing functional blowers and controls; automating the existing manually controlled DO controls; programming for the entire system; completing potential piping modifications; completing modifications to the power supply requirements if necessary; and the replacement of the existing coarse bubble diffusers with fine bubble diffusers.

Thermal Hydrolysis Evaluation for Roberto R. Bustamante Wastewater Treatment Plant Sludge Processing Facility, El Paso Water Utilities, El Paso, TX.

Process specialist responsible for the feasibility evaluation of thermal hydrolysis process for pretreatment of sludge at 30 MGD Roberto R. Bustamante WWTP Sludge Processing Facility. The feasibility evaluation involved review and analysis of current solids production, modeling and calibration of current anaerobic digestion process, including proposed improvements with thermal hydrolysis pretreatment, evaluation of two leading vendor's proposal for thermal hydrolysis, development of conceptual design and layout to estimate the capital and operating costs and cost analysis to determine payback period and return on the investment from enhanced energy recovery and solids disposal cost savings. The feasibility evaluation study will serve as a basis for the development of detailed design for the proposed sludge processing facility upgrades.

1.35 MGD City of Petersburg Wastewater Treatment Plant ENR Improvements, City of Petersburg, WV.

Project manager. This project included the preparation of a preliminary engineering report and included state funding assistance, design documents, construction plans and specifications, bidding assistance, and construction administration services for upgrading the existing 1.35 MGD secondary wastewater treatment facility. The proposed upgrade of this facility included new headworks, flow splitter boxes, anoxic/selector tanks, nitrified mixed liquor circulation pumps, intermediate pump station, denitrification filters, tertiary filters, diffuser replacements, chemical feed systems, belt filter press upgrade, yard piping, and electrical and instrumentation work.

Noman Cole Jr. Pollution Control Plant Design-Build Water Re-Use Project, Fairfax County, VA.

Design engineer responsible for designing and preparing plans and specifications for water reuse system which included modifications to an existing plant water pump station to provide 4,600 gpm of reuse water pumping capacity, a new chlorination system, 5-miles of 12-inch through 36-inch reuse water piping, a 500,000 gallon elevated storage tank, a 1,500 gpm booster pump station, a 200 gpm irrigation pump station, irrigation system, and instrumentation and controls. The chlorination system included the installation of two new 1,500-gallon

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sodium hypochlorite tanks and two chemical metering pumps, controls and appurtenances in the existing chlorination building. Work also involved the installation of total residual chlorine and turbidity water quality monitoring equipment, flow meters, and motorized valves for automatic control of chlorine dose.

Lorton Landfill Leachate Treatment Project, Fairfax County, VA. Project manager responsible for reviewing the Fairfax County sewer use ordinance and applicable federal and state requirements in order to determine the quality requirements for leachate discharge, compare the average and maximum leachate loading rates to the discharge requirements, and evaluate whether pretreatment would be required to discharge leachate to the POTW. Developed plans and specifications for leachate treatment and conveyance system and assisted with discharge permitting process.

Mid-America Industrial Park 2.0 MGD Wastewater Treatment Plant, Pryor, OK. Design/project engineer responsible for planning, designing, and the construction of a new 2 MGD sequencing batch reactor facility at MidAmerican Industrial Park in Pryor, Oklahoma. This project included construction of a raw influent pump station, two sequencing batch reactor basins, a sludge holding basin, sludge processing building, two aerobic sludge digester basins, a UV disinfection system, flow measurement structure, blower facility, associated equipment and piping for all basins, and electrical and instrumentation work.

City of Jenks 2.0 MGD Wastewater Treatment Plant Expansion, Phase 3, City of Jenks, OK. Design/project engineer responsible for planning, designing, and construction for Phase 3 expansion of the existing wastewater treatment plant in the City of Jenks, Oklahoma. This project included: construction of a final clarifier; improvements to headworks to include a new mechanically cleaned screen and grinder; the addition of lamps to the existing UV disinfection system; improvements to the sludge building to include a new sludge recirculation pump with VDF and piping modifications; conversion of the existing oxidation ditch into an aerobic digester basin; a blower housing facility; improvements to the digested sludge pump station; a sludge dewatering container; a polymer dosing system; yard piping; and electrical and instrumentation.

City of Jenks 2.0 MGD Wastewater Treatment Plant Expansion, Phase 2, City of Jenks, OK. Design/project engineer responsible for planning, designing, and construction for Phase 2 expansion of the existing wastewater treatment plant in the City of Jenks, Oklahoma. The project included: construction of a new aerated grit chamber; an oxidation ditch; improvements to headworks and sludge pump station; yard piping; and electrical and instrumentation.

Facility Plan Update for 8.5 MGD Water Pollution Control Facility, City of Enid, OK. Lead engineer responsible for the preparation of the water pollution control facility plan for the City of Enid, Oklahoma. The updated facility plan included: quantifying the present and future needs at the City of Enid's Water Pollution Control Facility, including industrial discharge and pretreatment program; documenting and evaluating the condition of the existing wastewater treatment units; proposing several alternative solutions that addressed both the liquid and solids treatment system needs; evaluating the proposed expansion alternatives from a qualitative and quantitative methodology; and making recommendations

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concerning the design, cost, phasing, and implementation for the recommended solutions.

Sanitary Sewer Master Plan for the City of Enid, OK. Lead engineer responsible for the preparation of the Sanitary Sewer Master Plan for the City of Enid, Oklahoma. This project provided a complete sanitary sewer system master plan with a special emphasis on the evaluation of the City's existing wastewater treatment facility. The project focused on obtaining the most pragmatic and cost-effective solution to the present-day problem at the collection and treatment systems

Lower Sycolin Sewage Conveyance System, Town of Leesburg, Loudoun County, VA. Project manager responsible for design and detailed engineering, permitting, preparation of plans, specifications, and construction administration of a sewer system. Work included construction of 2.1 MGD sewage pump station, 6,500-linear-feet of 10-inch force main, 6,500-linear-feet of 8-inch gravity sewer, and 11,000-linear feet of 16-inch gravity sewer main.

Raw Sewage Pump Station Improvements for Mid-America Industrial Park Wastewater Treatment Plant Expansion, Pryor, OK. Lead engineer responsible for the design and construction of 4 MGD headworks influent pump station at the Mid America Industrial Park Wastewater Treatment Facility. The project involved construction of a new, raw sewage pump station, including screening, wet well, pumps with variable speed drives, flow measurement, yard piping, HVAC, electrical and instrumentation work.

Nine Mile Creek Interceptor, City of Lawton, OK. Lead engineer responsible for the design and construction of approximately 46,000 feet of sanitary sewer interceptor main of various sizes, ranging from 12-inch to 54-inch in diameter, to serve a projected service area of 4,800 acres.

Nickel Creek Sewer Interceptor, Tulsa Metropolitan Utility Authority, OK. Lead engineer responsible for the design and construction of approximately 23,000-feet of sanitary sewer interceptor main of various sizes, ranging from 10-inches to 16-inches in diameter, to serve a projected service area of 1,230 acres.

Hydraulic Modeling of Prince William County Service Authority West End Water Model for Antioch Road Water Main Loop Closure, Prince William County Service Authority, VA. Project Manager. Responsible for updating the existing PWCSA West End model to evaluate the addition of proposed water mains at Antioch Road. The proposed water mains include approximately 10,500 feet of 18-inch water main and run along Route 55 from the Hoppman Property across I-66 and along Antioch Road to the Haymarket West Water Tank in the Dominion Valley Project. The hydraulic water analysis include the evaluation of the proposed water main pipe size by evaluating flow velocities for current and future water demands. Water age is evaluated in the vicinity of the interconnecting water mains for both current and future water demands. The hydraulic modeling is performed using InfoWater in accordance with the Prince William County Service Authority Utility Standards Manual.

30-Inch University Blvd Water Main Extension, Prince William County Service Authority, VA: Task Manager. Responsible for the alternative alignment evaluation, design, preparation of plans and construction administration of design-

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build of 30-inch waterline of 5,400 lf along University Blvd. between Sudley Manor Drive and Hornbaker Road for Prince William County Service Authority. This project also included corrosion control survey and cathodic protection measures and wetland delineation studies as the proposed water main crossed two major gas lines owned by Columbia and Williams gas companies and a major stream. The proposed waterline is to be connected to existing 30-inch water line at both ends and two different connections involving 12-inch and 8-inch existing water mains along the route.

City of Fairfax Water Main Replacement, Fairfax, VA: Project Manager.

Responsible for the construction administration of 8-inch water main on Sager Avenue and Main Street (Rt. 236) in the downtown City of Fairfax. The project consists of construction approximately 4,900 LF of 8-inch water main along route 236 (high traffic volume) and 3,000 LF of 8-inch water main along Sager Avenue including disconnection from and reconnection to existing water mains, providing new service connection to the customer's existing water meter from the new water main, providing new hydrants, abandoning existing 6-inch water main, maintaining service to customers, coordinating with the City on water main shut down and maintenance of all traffic during the construction.

Vint Hill Water System Capacity Deficiency Assessment Study, Fauquier

County, VA: Project Manager. Responsible for assessing and evaluating the existing water system to determine the system deficiencies and propose new improvements to meet the latest Fauquier County Water and Sanitation Authority Standards. The project includes the condition assessment of five ground water well pump houses, chemical dosing system and controls, three elevated storage tanks (75,000 gallon, 100,000 gallon and 150,000 gallon) and water distribution system and identification of necessary improvements and cost estimation of identified improvements and operation and maintenance.

New Baltimore Well Pumping and Water Main Extension, Fauquier County,

VA: Project Manager. Responsible for VDH permitting, design, preparation of construction plans, specification, bidding assistance for construction of pumps, controls and piping to connect two new groundwater wells to the County's water system.

Water Distribution System Analysis, Fort Belvoir, VA. Hydraulic modeler responsible for developing and performing water distribution modeling in order to determine the impact of proposed water demands from the new institutional developments and fire flows on available residual pressures of the existing water system.

Water Distribution Analysis, City of Bixby, OK. Hydraulic modeler/lead engineer responsible for updating the existing water distribution model to determine the impact of new residential and commercial developments on the City's water distribution system and identifying improvements that needed to be made to meet the City's system to meet the current and future demand. Several alternatives were evaluated for various scenarios.

North Highway 97/Shell Creek Pressure Zone Water Distribution System

Study, City of Sand Springs, OK. Hydraulic modeler/lead engineer responsible for updating the existing water distribution model for improving the water delivery

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capabilities. This project involved determining the feasibility and developing the costs for an additional alternative.

State Highway 39 Improvement Project, Oklahoma Dept. of Transportation, McClain County, OK. Hydrologic and hydraulic engineer responsible for performing hydrological analysis of the drainage basins in order to study the feasibility of extending the existing bridge and roadway RCB culverts to allow for road widening.

Sand Springs Community Center Stormwater System, Sand Springs, OK. Stormwater design engineer for the preparation of construction documents for the stormwater drainage system and detention facility for the community center. This project involved analyzing the runoff and designing the stormwater drains and detention pond to regulate the increased runoff from the development. The increased runoff was collected through the drains and routed through the detention pond to release the flow rates.

Union Elementary #13 Stormwater System, Union Public Schools, Tulsa, OK. Stormwater design engineer responsible for the preparation of construction documents for the stormwater drainage system and evaluation of the existing detention facility for the Union Elementary #13 School site.

Magnolia Floodplain Improvements, City of Seminole, OK. Design engineer responsible for improving approximately 40-acres of City property to allow for the expansion of a city park and the development of buildings within the current regulatory floodplain limits of Magnolia Creek without raising base flood elevation (BFE). The project involved the development of construction plans and specifications for the rough grading of two building sites, a parking lot, a lake, and related channel improvements.

Garland North Detention Pond, Enid, OK. Design engineer for the preparation of construction documents. This project consisted of analyzing a 160-acre drainage basin north of Garriot Road and widening an existing pond for detention in order to reduce the outflow enough to contain the discharge in a culvert.

Publications

Subramanian, Velmurugan, "Operational Strategies to Prepare the Wastewater Treatment Facilities for Extreme Weather Events," Proceedings of the Utility Management Conference 2022, Orlando, FL, February 21-24, 2022.

Subramanian, Velmurugan, Chakavak Kamran, Arthur Jones-Dove and Parimal Bachubhay, "Leveraging Current Technologies to Create Cost-Effective and Sustainable Solutions to the Implementation of 10.5 MGD Water Reclamation Facility Expansion for Nutrient Removal," WEFTEC Proceedings, New Orleans, LA, 2020.

Subramanian, Velmurugan, "Reliability Based Cost Optimization Approach for Wastewater Treatment Process Design," WEFTEC Proceedings, New Orleans, LA, 2018.

Subramanian, Velmurugan, Clarkson, W. W., and Veenstra, J. N., "Optimal Operational Strategies for Energy Savings at 5 MGD Full Scale Sequencing Batch Reactor Wastewater Treatment Plant," Energy and Water 2011 Proceedings, Chicago, IL, July 31-August 3, 2011.

Subramanian, Velmurugan, "Design Your Collection System to Reduce Risks of

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System Failures Due to Hydrogen Sulfide Gas Formation,” WEFTEC Proceedings, New Orleans, LA, 2010.

Subramanian, Velmurugan, Clarkson, W., and Veenstra, J. N., “Model-Based Design of Sequencing Batch Reactor for Removal of Biodegradable Organics and Nitrogen,” Water Environment Research, Vol. 82, No. 5., May 2010, pp. 462-474.

Subramanian, Velmurugan, “Estimation of Greenhouse Gas Emissions from a 2 MGD Full-Scale Wastewater Treatment Plant,” Proceedings of Odor and Air Pollutants 2010, Charlotte, NC, March 21-23, 2010.

Subramanian, Velmurugan, “Taking the LEED: Opportunities for Change in the Wastewater Sector,” Water Environment & Technology, September 2009.

Subramanian, Velmurugan, and Venestra, J. N., “An Optimization Model for Design and Operation of Sequencing Batch Reactor,” Proceedings of 4th Conference on Sequencing Batch Reactor Technology, Rome, Italy, 2008.

Subramanian, Velmurugan, and Veenstra, J. N., “Operational Cost Optimization Modeling for Conventional Activated Sludge Process,” WEFTEC Proceedings, San Diego, CA, 2007

Conference Presentations

Subramanian, Velmurugan, “BNR to ENR: Process Modification Achieves ENR Limits and Improves Plant Reliability,” Chesapeake Water Environment Association Tri-Association Annual Conference, Ocean City, MD, August 2018.

Subramanian, Velmurugan, “Emerging Energy Efficient Biological Process Technologies for Wastewater Nitrogen Removal,” Virginia Water Environment Association Annual Conference WATER JAM 2016, Virginia Beach, VA, September 2016.

Subramanian, Velmurugan, “Towards Energy Savings: New Process Technologies for Biological Nitrogen Removal,” Chesapeake Water Environment Association Tri-Association Annual Conference, Ocean City, MD, August 2016.

Subramanian, Velmurugan, “Impact of Sludge Pretreatment Technologies: Are the Process Operating Conditions of Anaerobic Digesters Ever the Same?” Virginia Water Environment Association Annual Conference WATER JAM 2015, Virginia Beach, VA, September 2015.

Subramanian, Velmurugan, “Sustainability and Wastewater Treatment,” Invited Seminar at Center for Environmental Studies, Anna University, India, August 2015.

Subramanian, Velmurugan, “Thermal Hydrolysis for Sludge Pretreatment? Is it a feasible process option for your WWTP?” Virginia Water Environment Association Annual Conference WATER JAM 2014, Hampton Roads, VA, September 2014.

Subramanian, Velmurugan, “Economics of Thermal Hydrolysis Process Upgrade for Existing Wastewater Treatment Facilities with Conventional Anaerobic Digesters,” Chesapeake Water Environment Association Tri-Association Annual Conference, Ocean City, MD, August 2014.

Rahman, Arifur, Riffat, Rumana, and Subramanian, Velmurugan, “Advanced Treatment Technologies for Removal of Endocrine Disrupting Chemicals in POTWs,” Virginia Water Environment Association Annual Conference WATER JAM 2012, Virginia Beach, VA, September 2012.

Subramanian, Velmurugan, “Wastewater Treatment Challenges from the Potential Regulation of Emerging Contaminants,” Virginia Water Environment Association

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Annual Conference WATER JAM 2011, Virginia Beach, VA, September 2011.

Subramanian, Velmurugan, "An Outlook for Membrane Bioreactors in Wastewater Treatment," Virginia Water Environment Association Annual Conference WATER JAM 2010, Hampton, VA, September 2010.

Subramanian, Velmurugan, Sabatini, D. A., and Kibbey, T. C. G., "Model Development for Solvent Replacement with Aqueous Surfactant-based Systems," 92nd AOCs Annual Meeting and Exposition, Minneapolis, MN, May 13-16, 2001.

Professional activities

Adjunct Faculty at the George Washington University and George Mason University

Virginia State Representative for American Academy of Environmental Engineers and Scientists (AAEES) since 2013

National Council of Examiners for Engineering and Surveying (NCEES) PE Environmental Engineering Exam Committee Member since 2008

Panel Member for National Science Foundation for reviewing Environmental Engineering research proposals (2014 Environmental Engineering Panel)

Sustainability Exam Committee Member, American Academy of Environmental Engineers and Scientists (AAEES). This committee created new board certification for the Sustainability for the first time in 2009

Technical Review Committee Member, Chesapeake Bay Trust Watershed Assistance Grant Program (2022)

Member, Water Environment Federation (WEF) Municipal Resource Recovery Design Committee (2008-2011; 2021-Current)

Member, Water Environment Federation (WEF) Research & Innovation Committee (2021-Current)

Member, American Council of Engineering Companies of Metropolitan Washington Water Infrastructure Committee (2019 – Current); Communications and Outreach Sub Committee Lead (2020-2021)

Reviewer: Water Environment Research

Reviewer: Water Science and Technology

Reviewer: Manual of Practice on Membrane Bioreactor (WEF)

Reviewer: Understanding and Applying New Sustainability Metrics in the Water Sector (WEF TPU)

Reviewer: Environmental Management Systems: Advancing Sustainability (WEF TPU)

Reviewer: RFQ/RFP Guidance for Water/Wastewater Projects (WEF TPU)

Reviewer: Co-digestion of Organic Wastes at Wastewater Treatment Plants (WEF TPU)

Reviewer: User-Fee-Funded Stormwater Utilities (WEF TPU)

Reviewer: Roadmap to Energy Sustainability (WEF TPU)

Technical Program Committee Member: Reviewed abstracts for WEF/IWA Nutrient



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Removal and Recovery 2013

Served as Reviewer and Moderator for VWEA WaterJAM Annual Conference 2011 through 2015

Served as Reviewer and Moderator for CWEA Annual Conference 2015 and 2021

Served on Judging Panel of AAEEES Excellence in Environmental Engineering Awards 2016

High School Science Fair, Fairfax County, Member of Judging Panel (2011)

Architecture, Construction and Engineering (ACE) Mentor Program, Member of Judging Panel (2012)

Chesapeake Section of the American Water Works Association Student Poster Competition, Member of Judging Panel (2021)