

## ARCADIS

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Item #	Line Item	Notes	Unit Price	Qty/Unit	Attch.	Docs
PNC2116651P1--01-01	Regional Transmission System Master Plan	<b>Supplier</b> <b>Product Code:</b> <b>Supplier Notes:</b> Financials have been sent under separate cover.	First Offer -	1 / each	Y	Y
<b>Supplier Total</b>						<b>\$0.00</b>

ARCADIS

Item: **Regional Transmission System Master Plan**

Attachments

Arcadis\_Response to PNC2116651P1.docx



Broward County Board of County Commissioners

PROPOSAL

# Professional Engineering Services for Regional Transmission System Master Plan

PNC2116651P1

JULY 2018



**BEST TEAM | EXPERIENCED PROJECT MANAGER | PROVEN TOOLS**



Broward County Board of County Commissioners  
Broward County Purchasing Division  
115 South Andrews Avenue, Room 212  
Fort Lauderdale, FL 33301

Arcadis U.S., Inc.  
8201 Peters Road, Suite 2400  
Plantation, Florida 33324  
Tel 954.761.3460  
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Subject:  
**Regional Transmission System Master Plan  
Solicitation PNC2116651P1**

Dear Selection Committee Members:

Arcadis U.S., Inc. (Arcadis) has enclosed our qualifications to provide Professional Engineering Services for Regional Transmission System Master Plan for Broward County Water and Wastewater Services (County). Through this solicitation, the County is presenting Arcadis and our trusted teaming partners with an opportunity to assist you with your important master planning project. Selection of Arcadis by the County will bring you a robust and solid team with the capacity to deliver your Regional Transmission System Master Plan successfully and meeting all County expectations and objectives. Some of the key qualifications that make Arcadis the right choice for the County include:

#### THE BEST TEAM

- **Fresh Look at your System** - Arcadis comes to this project with no preconceived ideas regarding your infrastructure since we have not worked on any studies or designs in the recent past. This allows a fresh set of eyes and new perspective when looking at the required capacity and rehabilitation and replacement needs for your force mains and master lift stations. We will utilize our extensive knowledge of best practices from utilities of similar size to create a prioritized capital plan.
- **National Experts in Risk-Based Planning** - Your Project Task Leaders, including Celine Hyer and Greg Osthuess, are known National experts in the field of risk-based capital planning and just happen to be located in Arcadis's Tampa office. This allows you access to the best of Arcadis at the least cost and no learning curve to support your needs.
- **Trusted and Experienced Teaming Partners** – Our subconsultant partners are Eckler Engineering (CBE – W/WW Engineering), Gamboa Engineering (CBE – Electrical), Radise International (CBE – Geotechnical/GIS), Conemco (CBE – Structural), and Stoner and Associates (CBE – Surveying), each of whom provide a working knowledge of your system, and a proven track record of successful projects with the County.

#### WATER BUSINESS LINE

Date:  
July 13, 2018

Contact:  
Leah (Richter) Torres, PE

Phone:  
954.525.2499

Email:  
Leah.Torres@arcadis.com

Our ref:  
66006522.0008

Florida License Numbers  
Engineering 7917  
Geology GB564  
Surveying LB7062  
Building Contractor CBC059326



July 13, 2018

### EXPERIENCED LOCAL PROJECT MANAGER

- **Ideally Qualified for This Project** - Your designated Project Manager, Chris Barlow, PE, provides the ideal qualifications for this project through his experience in hydraulic modeling, wastewater pump station rehabilitation design and construction, and force main design and construction.
- **In-Line Booster Pump Station Experience** - Of particular note, Chris served as the lead engineer for three in-line booster pump station projects and he will lead this project from our Plantation office located only minutes away.

### PROVEN TOOLS

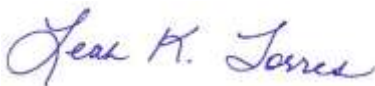
Because of our long history of providing Risk-Based Planning services to all sizes of utilities across the country, we have developed and refined numerous customized tools which we can provide to you to support your Prioritized Capital Plan development:

- **Database Profiler** – The Arcadis Database Profiler tool will be used during the data analysis phase of work to determine how complete the attribute data is within your existing GIS/CMMS systems to support the force main desktop risk assessment. We have used this tool successfully in numerous utilities throughout Florida, including Lee County, St. Petersburg and Ft. Myers.
- **AssetHound™** – The Arcadis AssetHound™ tool is a tablet-based application used to support the full range of field condition assessment activities. AssetHound™ supports one-time electronic data entry, including the option to take and catalog photos and GPS coordinates simultaneously, which significantly reduces human error and the time required for assessment. This tool is extremely customizable and flexible to meet your needs for the pump station assessments. We have successfully used AssetHound™ to assess millions of assets, including Florida utilities, such as, Miami-Dade-WASD, Toho Water Authority and Lee County Utilities.
- **GIS Renewal and Replacement Planning System (RRPS)** – This ESRI-based tool created by Arcadis works with your existing GIS structure and data to perform risk scoring and conduct short and long-term replacement planning based on defined service levels and pipeline decay curves. The tool requires no special license fees and can be installed on any County computer currently using ESRI GIS at the end of the project (if desired) to continue in-house planning efforts.

Our team and our experience fully meet Broward County's needs and will deliver results that exceed your expectations. We thank you for the opportunity to present our team's qualifications and approach to your Master Plan and look forward to the possibility of working with Broward County. Please do not hesitate to contact us should you have any questions.

Very truly yours,

Arcadis U.S., Inc.



Leah (Richter) Torres, PE  
Project Officer



Chris Barlow, PE  
Project Manager

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**Professional Engineering Services for  
Regional Transmission System Master Plan**  
Bid Number: PNC2116651P1

# 1. ABILITY OF PROFESSIONAL PERSONNEL



# 1 ABILITY OF PROFESSIONAL PERSONNEL

## Company Profile

Arcadis is *the leading global Design & Consultancy firm* for natural and built assets. Applying deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are 27,000 people active in over 40 countries that generate \$3.7 billion in annual revenues. They also support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

Established in 1967, Arcadis has long-standing relationships with many clients involving a wide variety of water and wastewater consulting and engineering services, some spanning multiple decades. Working closely with our clients to address their unique circumstances and concerns, we have developed innovative ideas and solutions for some of the most complex problems and projects in our industry.

Arcadis offers a full range of water and wastewater utility services, including:

- Water treatment and distribution design
- Water supply planning and development
- Wastewater treatment and conveyance design
- Water and Wastewater pumping systems
- Permitting
- Master Planning
- Program Management
- Construction Management
- Management Consulting and IT services
- Water and wastewater rate and cost of service studies
- Surface water management

### Employees and Offices

#### United States:

- 4,900 personnel
- 135+ offices

#### Worldwide:

- 27,000 personnel
- 350 offices in 40 countries



**Our local Plantation office has a team of over 20 staff members and it is supported by over 340 professionals across a wide variety of disciplines backed up nationally by more than 4,900 professionals that can be called upon for technical assistance as needed. among eight Florida offices, which includes three offices located directly in Southeast Florida. Arcadis has performed a thorough review of resources in the State to ensure that local knowledge and established local relationships can be leveraged to bring Broward County exemplary services.**





## Firm’s Qualifications

### Water and Wastewater Master Planning

Our comprehensive, flexible approach to water and wastewater planning begins with developing demand projections that incorporate the anticipated savings of proven water conservation techniques, recent plumbing code changes, and water reuse opportunities. We have completed literally hundreds of projects requiring the production of demand projections.

We help utilities assess options for the development of new supplies and optimization/maximization of existing surface and/or groundwater supplies using reservoir and groundwater system models to fine-tune analyses. Using the latest hydraulic modeling techniques, we develop practical plans for extension and upgrades of water distribution and wastewater collection systems.

### Wastewater Collection Systems

**Arcadis has been involved in the evaluation, planning, design, and construction of collection and conveyance systems for over 100 years.** Our engineers have provided these services to a wide range of municipal, industrial, and private clients, developing new or replacement systems as well as evaluating and upgrading existing systems. The firm’s range of services related to wastewater collection systems includes:

- Studies of sewer systems to quantify infiltration and inflow (I/I), eliminate bypasses, and increase hydraulic capacity
- Detailed capacity modeling and condition and risk assessments supporting prioritized Capital Program development.
- Pipeline routing studies and environmental assessments for new sewer systems
- Design, environmental monitoring, and construction phase services for new and rehabilitated sewer

### Pipe Rehabilitation and Repair

Pipe rehabilitation often is necessary to reduce the amount of leakage and/or to stabilize/repair a deteriorating pipe. This rehabilitation work frequently requires an evaluation of innovative technologies to overcome construction obstacles. Our experience in the rehabilitation of distribution and collection systems throughout the U.S., under a wide range of conditions, provides Arcadis with in-depth knowledge of virtually all traditional as well as state-of-the-art rehabilitation techniques. We have evaluated and implemented a broad range of pipeline repair methods to reduce the risk of pipe rupture, and we have prepared emergency response plans for pipe failures.

Members of our proposed staff participate in the local, state and national professional organizations and stay up to date with the latest proven technologies used to solve

complex problems in a cost-efficient way. Much of our work on improving existing transmission systems has involved trenchless pipe repair techniques, including slip lining, cured-in-place pipe lining, spiral-wound expandable lining, fold-and-formed pipe insertion, pipe bursting, internal and exterior bracing with the use of carbon fiber wraps or steel bands – all of which are less costly and less disruptive than pipe replacement construction.

### Wastewater Retail Lift Stations and Master Pump Stations

Arcadis has a long history of experience in the design of new wastewater pump stations and the upgrade of existing pump stations. **Through our value engineering approach, we can provide our clients with designs that meet their needs while achieving the goal of minimizing construction and O&M costs.**

Upgrading existing pump stations requires a special design approach because of the need to work within existing site constraints and to maintain continuous operation of the station during construction. We have developed the necessary skills to complete this type of work with minimal disruption to normal operations.

In both new and upgraded facilities, our involvement continues beyond the planning, design, and construction stages to include configuration of computerized monitoring and control systems, startup guidance, assistance with operations, and staff training. In designing the layout of pump stations and in configuring piping systems, force mains, and support systems, Arcadis engineers consider the need for future expansion. Durability and reliability also are major considerations. We give particular attention to specifying materials and equipment that will give long life and require low maintenance.

### Business Advisory: Finance/ Administrative Rates and Fees, Bond Feasibility, Annual Engineering Reports required by Bond Covenants

Arcadis is the leader in financial management consulting services and the team members selected to work on this project represent some of our best and brightest. Further,

Arcadis has extensive financial market experience and an excellent reputation on Wall Street. We ensure trust among the investment community by representing clients in an independent and accurate manner. Our reputation lends additional credibility to the County that can result in strong investor confidence and better bond issuances and rates.

### Trusted Subconsultants

To further enhance the depth and abilities of our project team, we have joined forces with the following subconsultants. A brief corporate biography for each subconsultant is provided below. **“We are committed to meaningful CBE participation. Arcadis has established a collaborative working relationship with our CBE partners and will provide meaningful roles to them, making them partners in decision making and often relying on them to perform entire tasks. Arcadis is committed to an overall CBE participation of 33 percent, which exceeds the 30 percent required by the Office of Economic and Small Business Development Program for this contract.”**



Conemco Consultants is a certified CBE/SBE in Broward County, along with holding other disadvantaged business certifications in the State of Florida and various surrounding counties including Miami-Dade and Palm Beach Counties. Conemco is an engineering company created to provide engineering design and forensic services for commercial, residential and infrastructure projects. Their design and forensic engineering staff is comprised with qualified engineers with more than 20 years of experience in disciplines including structural, civil, geotechnical, mechanical, environmental, construction and material science.



### Eckler Engineering, Inc. (CBE) - In-Line Pump Stations

Eckler Engineering was established in July 1985 to provide professional engineering services to governmental and private clients. Eckler Engineering specializes in water, wastewater, and reclaimed water systems engineering. Eckler Engineering provides complete project engineering

services from preliminary/conceptual planning through design, permitting, bidding/award, engineering services during construction, and project closeout.



**Gamboa Engineers,  
LLC (CBE) – Electrical  
and Instrumentation**

Gamboa Engineers began in 2012 when Mario A. Gamboa, PE decided to start his own consulting electrical engineering company offering engineering services to clients in the water and wastewater industry. Gamboa specializes in the planning, design, and engineering support during construction of electrical power distribution, process controls and instrumentation systems with focus in support of wastewater treatment facilities and water treatment / distribution facilities.



**RADISE International – GIS  
(CBE)**

Founded in 1997, RADISE International (RADISE) has worked with many public and private sector clients and continues to grow and expand its capabilities. Their focus is on solving challenges and have built a reputation as a firm which delivers on time, on budget, and on target. The firm specializing in GIS and Geotechnical Engineering working with both the public and private sectors serving clients including FDOT, SFWMD, USACE, cities, counties and numerous private entities in both the prime and subconsultant capacity.



**Stoner and  
Associates (CBE) –  
Survey**

Since 1988, Stoner and Associates (Stoner) has placed a strong emphasis on quality surveying and mapping practices and procedures. This focus ensures that surveying personnel are committed to exceeding the County’s expectations. This experience has resulted in a tremendous database of knowledge and information. Stoner’s familiarity with local conditions and resources provides valuable insight into the County’s individual project needs and requirements.



**Assured Leadership**

Our proposed Project Manager, Mr. Chris Barlow, PE has over 20 years of experience in a wide array of water and wastewater projects. He serves as Project Manager for a number of professional engineering contracts providing on-call support. Mr. Barlow will assure that the team is available, assigned and focused. In this role, he will provide the controls and structure to enable our team to successfully complete projects both on-schedule, and within-budget.



**Corporate Officer and  
Contract Manager**

Ms. Leah Torres, PE has over 20 years of experience in a diverse background in environmental and civil engineering with a focus on servicing utilities such as Broward

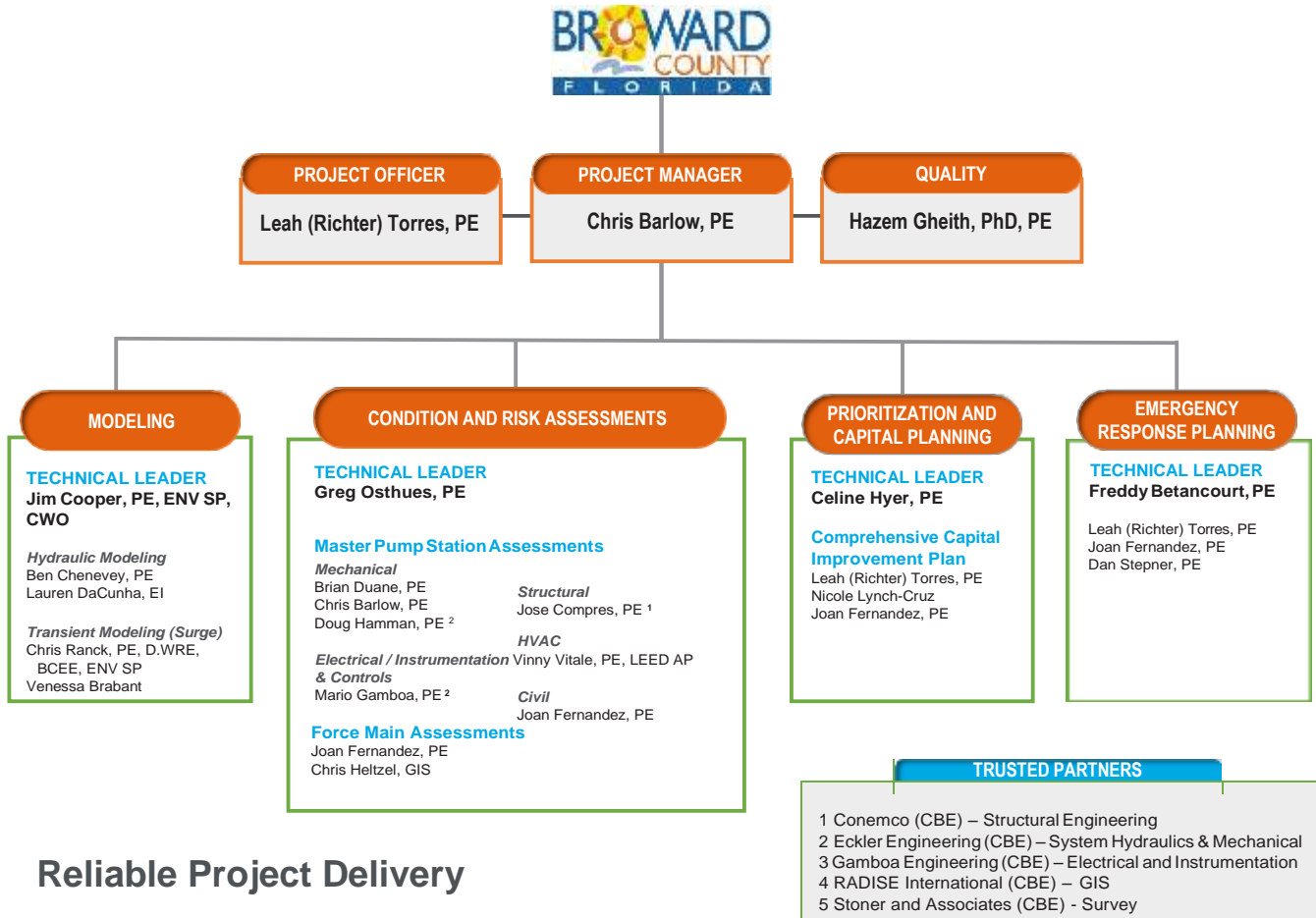
County Water and Wastewater Services. She serves as the Corporate Office and Contract Manager for a number of professional engineering contracts providing on-call support in a wide array of water wastewater projects. In this role, she will provide the controls and structure to enable our team to successfully complete projects both on schedule, and within budget. The leadership for this team has extensive experience in the following areas for utility and municipal clients throughout south Florida:

- Water treatment and distribution design
- Water supply planning and development
- Wastewater treatment and conveyance design
- Water and wastewater pumping systems
- Permitting
- Master Planning
- Construction Management and Administration
- Water and wastewater bond covenant reports
- Surface water management

Our success in meeting schedule and budget can be credited to their project and contract oversight. The County can see the benefit of their leadership as Arcadis provides a high caliber of technical staff needed to meet the critical aspects of the project.

## Organizational Chart and Availability of Specialty Resources

The Project Organization Chart below displays our team members, all who are available and committed for the duration of the project for a timely project delivery. This chart illustrates the duties, responsibilities and lines of communication for project team staff members proposed for this project. The Arcadis Team proposed for this Water Transmission System Master Plan contract provides the diversity and technical expertise from our Team as well as specialized staff from our subconsultants that the County needs to successfully perform under this contract. Short resumes for key team members identified in the organizational chart are included in Appendix A. Relevant projects our firm and key members have completed are included in Appendix B.



## Reliable Project Delivery

As shown on the Organizational Chart, our Leadership Team is supported with a primary Project Delivery Team, composed of staff with expertise in the range of disciplines required to complete this scope of work.

Collectively, Arcadis has assembled a reliable project delivery team based in South Florida, with National Expert support that ensures that we can be agile and responsive to you. We are committed to providing the County with the high level-of-service and responsiveness to keeping the County well-informed of project progress and issues, and to rapidly and efficiently deliver projects in a timely matter.

On the following pages, you will find team members' resumes highlighting their experience.



## Chris Barlow, PE

### Project Manager / Master Pump Station Assessments



#### Years Performing Job Title:

- 20 years

#### Professional Registration/ Certification:

- Professional Engineer - FL
- Construction Documents Technologist
- Occupational Safety and Health Administration (OSHA), 10-hr Construction Safety and Health Course January 2014

#### Education:

- BS Environmental Engineering 1998

#### Benefit to Broward County

**As your local project manager, Chris brings broad pump station rehabilitation design and force main design experience focused in south Florida, which result in completing utility projects from planning to close-out of construction.**

Mr. Barlow is an experienced engineer that has focused his practice in the analyses and designs of municipal water utility projects, primarily in South Florida. This experience has been developed through the execution of numerous water, wastewater, and water reclamation projects. This experience includes the successful completion of pump station rehabilitation and installation projects; pipeline projects, with extensive experience in horizontal directional drill (HDD) projects; water treatment and supply projects, such as Surficial and Floridian (brackish) and surficial aquifer wellheads, membrane filtration, chemical feed systems, degasification and odor control systems; hydraulic modeling and master planning of water distribution and wastewater collection systems; survey coordination, design, permitting, construction observations, construction administration and final regulatory certification of these projects.

#### Relevant Work Experience:

##### **Bond Consulting Engineer: Condition Assessment of Utility System Assets / Miami-Dade County, Water & Sewer Dept. Miami, FL**

Lead engineer while conducting annual inspections of WASD's facilities and assets. These services consist of the characterization of major water and wastewater utilities system assets through site inspections, review of information furnished by WASD, and staff interviews.

##### **Remote Reclaimed Water In-Line Booster Pump Station / City of Delray Beach, FL**

Served as lead design and construction services engineer for this project that consisted of replacing two existing wastewater booster pumps with two 75 hp horizontal end suction reclaimed water booster pumps at an existing pump station. The system utilized a typical by-pass for downstream flows up to 2,500 gpm and the pumps provided the pressure to boost the flow to 6,000 gpm.

##### **ASR In-Line Booster Pump Station and Wellhead Improvements / City of Sunrise – Sawgrass Utility Complex, Sunrise, Florida**

Served as lead design this project that consists converting an exploratory Floridian aquifer well to an aquifer storage and recovery (ASR) well. The design elements of the project includes the installation of an in-line booster pump station that conveys surplus Biscayne Aquifer water down the Floridian (ASR) well and new well pump and discharge piping at the ASR wellhead.

##### **West Wastewater Transmission System, In-Line Booster Pump Station / Indian River County Utilities, Vero Beach, Florida**

Served as planning and project development engineer for Indian River County's first in-line wastewater booster pump station. The in-line booster pump station allows the wastewater to be pumped to either the South or West wastewater treatment plants, conserves energy, and avoids odor and overflow problems normally associated with re-pump stations. The design includes variable speed pumps, piping, control valves, auxiliary generator power supply, electrical, and instrumentation.

### **High Service Pump Station Upgrades / City of Hollywood, Water Treatment Plant – Hollywood, FL**

Lead design engineer for the evaluation, design and permitting of the upgrades to the pump station that was originally built in the early 1970's. The project will provide for the installation six 8,000 gpm variable speed pumps to replace ten existing constant speed pumps that sizes that range in size from 2,500 gpm to 14,000 gpm pumps. The construction will include the installation of new isolation and control valves, controls improvements and the installation of HVAC improvements to the existing electrical room to account for the heat load produced by the variable frequency drives.

### **Water Distribution Systems Hydraulic Analysis / Martin County Utilities and Solid Waste, Martin County, FL**

Project engineer providing hydraulic modelling analysis of Martin County's water distribution systems. The analyses are performed using GIS and WaterCAD/WaterGEMS, a computer hydraulic modelling program used to analyse pressure flow pipe systems. The model is the tool used in establishing capital budgets for improvements to the water distribution system. These improvements included items for more efficient system operation as well as planning for future growth and demands. Future conditions were determined based on projected population growth and land uses over the next 20 years.

### **Water Master Plan / City of Tamarac, Tamarac, FL**

Project engineer for the development of a comprehensive 20-year Water Master Plan. Tasks included asset inventory and condition assessment, field investigations, computerized hydraulic model development, population and flow forecasting, and recommendations for development of a 20-year Water Capital Improvement Program.

### **Comprehensive Plan – Wastewater Element Town of Lantana / Lantana, FL**

Project engineer responsible for developing a Comprehensive Wastewater Plan for Town of Lantana. Tasks included forecasting population and flow projections, asset inventory and evaluation, hydraulic modeling of existing and future flow projections, and development of a Wastewater Capital Improvement Program for the Town.

### **Wastewater Pump Station Design / Village of Gulfstream Park, Hallandale Beach, FL**

Lead utility design engineer for the land development team that provided modifications to the wastewater master transmission system and master plan for this site re-development. These modifications were necessary to accommodate increasing the flow from that parcel from 50,000 gpd to 1 million gpd. This phasing plan for the site redevelopment included the design of a large pump station and horizontal directional drill wastewater force main installation of Highway US-1, with develop progress milestones that identified additional infrastructure improvements, determined by several hydraulic modelling scenarios of the existing and proposed systems. The additional phased infrastructure consisted of installing a third pump in the triplex pump station that was designed for build-out, along with installation of two additional parallel wastewater force mains within the existing collection and transmission system.

## Hazem Gheith, PhD, PE

### Quality



#### Years Performing Job Title:

- 32 years

#### Professional Registration/ Certification:

- Professional Engineer - OH

#### Education:

- PhD Civil & Environmental Engineer  
Ohio State University-Main Campus  
2005
- MS Applied Physics Cairo University  
1990
- BS Civil Engineering Cairo University  
1985
- 

#### Benefit to Broward County

**Hazem brings more than 30 years of experience in hydraulics modeling, with nationally recognized thought leadership in innovative and integrated modeling approaches.**

Dr. Hazem Gheith has 32 years of experience in hydrologic and hydraulics modeling of urban drainage. He has innovative micro-scale modeling approach, integrating stormwater and wastewater systems to improve the flow computation at the source (house level). The new approach generates high level of continuous flow prediction accuracy, accounting for the surface and groundwater flow routing, taking into consideration the seasonal changes in groundwater and evapotranspiration. The approach facilitates the development of educated integrated plan programs, including green infrastructures and I/I reduction.

Dr. Gheith used hydrologic and hydraulics models to mitigate street flooding, water-in-basement recurrences, sanitary and combined sewer overflows, and Real Time Control applications to enhance collection systems and their operation.

Dr. Gheith has presented and authored several technical research papers at WEFTEC and SWMM on advancing the collection systems planning, and provided workshops and training in hydrology and hydraulics and computer modeling..

#### Relevant Work Experience:

##### **Blueprint Columbus - New Bedford GI and I&I Improvements Project / City of Columbus, OH**

Technical Manager to plan and design green infrastructure (GI) program to mitigate additional surface stormwater due to Blueprint Columbus I/I Mitigation program. GI units included rain gardens, bioretention cells with and without bump-outs, tree boxes, and pervious pavements. Filtration media type and footprint was selected and sized to achieve 20% TSS removal target. As member of the Pilot Area Technical Committee, prepared Blueprint Columbus Stormwater Modeling Guidelines to construct enhanced model platform to allow educated planning of the GI program. The model platform included using DEM data to add the street channels for surface flow routing, adding storm inlets from survey activities, and including downspouts discharge configuration from field investigation. DEM is used to identify and add incidental depression storages as depth-area storage units to improve surface hydrology calculation. Prepared existing conditions, base conditions and GI condition models and identified effectiveness measure for each GI using typical year storms.

##### **City-Wide Modeling / City of Columbus, OH**

Project and Technical Manager for the City's system wide model (46,000 manholes) enhancement and application to the City's integrated plan. Enhanced the city-wide model by applying source-level modeling approach to plan systemwide green infrastructure program and RDII reduction plan to mitigate over 120 CSOs and SSOs. The new approach supported a new integrated plan, which is \$1-billion less than the previous wet weather management plan. The project includes statistical analysis to data from 72 rain gauges and comparison to processed radar rainfall data to generate a 20-year continuous rainfall records for usage in evaluation of the recurrence of deficiencies and mitigation plans. Calibrated the collection system to more than 180 flow monitoring points.

### **Green Infrastructure Research and Development / New York City DEP, New York, NY**

Technical Advisor for the performance evaluation and the representation of DEP GreenHub green infrastructure units into DEP models. Evaluated the performance of the constructed GIs at Demo Areas 1, 2 and 3 and proposed modeling platform suitable for the bioswales, including enhanced infiltration process and inlets and outlets representation. Prepared low-flow monitoring plan for various GI units to improve the understanding of inlets and outlets constraints on GI performance. Configured a monitoring plan for the subsurface moisture content and groundwater table. Supported DEP in enhancing the GI implementation sequencing and design for future GI units to maximize benefits and reduce cost.

### **Overall Engineering Coordination / City of Columbus, OH**

Technical Manager for the hydraulic modeling tasks. Used the City of Columbus system-wide model to plan the implementation of a comprehensive green infrastructure program. Planning activities included site planning, GI sizing and hydrologic and hydraulic modeling. The hydraulic modeling integrated the runoff catchment hydraulics, the GI units and the collection system to mitigate CSO activations from five CSO structures located along the Olentangy River. Evaluated a comprehensive program to reduce RDII in the separate system to eliminate over 90 SSo activations up to the 10-year level of service.

### **Wastewater Treatment Basin Planning/Design / Allegheny County Sanitary Authority, Pittsburgh, PA**

As hydraulic modeling and improvements planning task leader, currently supporting Allegheny County Sanitary Authority (ALCOSAN) in its consent decree to mitigate more than 100 Combined Sewer Overflows (CSOs) in the Main Rivers Basin. Responsible for building a robust hydraulic model for affected portions of Pittsburgh Water and Sewer Authority (combined flow) and Reserve Township (separate flow) collections systems. Used his innovative continuous calibration technique to calibrate the basin-wide H/H model to more than 300 flow meters. Working with the client to use the H/H model to evaluate system performance in a continuous typical year storms condition. Also responsible for screening mitigation technologies and compiling a cost-effective facility plan. The recommended capital projects are expected to involve approximately \$3.5 billion worth of system upgrades and improvements.

### **Adjunct Faculty Instruction**

Taught senior-level engineering courses to both undergraduate and graduate engineering students. Taught Finite Element Methods, a senior-level course. Trained students to apply the finite element package ALGOR to several types of engineering applications. Taught Experimental Stress Analysis and trained students on using strain gages and photo-elasticity techniques from both a theoretical and an experimental perspective.

### **Columbus Sewer Capacity Study / City of Columbus, OH**

As Hydraulic Modeling Task Leader, built the hydraulic model of Metropolitan Columbus to reflect collection system growth activities. Organized establishment of short- and long-term flow monitoring locations. Updated the sewer system capacity model (SSCM) with RTK RDII technique to enhance WWF prediction and reduce calibration efforts. Implemented over 20 applications of calibrated models, some including capacity enhancement improvements.



## Leah (Richter) Torres, PE

**Project Officer** / Comprehensive Capital Improvement Plan / Emergency Response Planning



### Years Performing Job Title:

- 21 years

### Professional Registration/ Certification:

- Professional Engineer - FL

### Education:

- MS, Civil Engineering 2002
- BS, Environmental Engineering 1997
- Program Management, Academy  
-Leading Complexity University of  
Oxford - Said Business School

### Benefit to Broward County

**Leah currently serves as Arcadis' Southeast Florida Operations Leader and as Program Manager for one of the largest capital projects in the State of Florida. She is located minutes from the County offices in order to ensure timely and seamless support to the County's team.**

Ms. (Richter) Torres has a diverse background in program management, business advisory and financial consulting services and civil engineering. She specializes in assisting municipal clients in South Florida with managing their planning, operational and capital program needs. Her experience includes project management and delivery, vendor procurement, contract compliance, regulatory permitting, public outreach, annual reporting to bondholders/trustees, litigation support services, environmental compliance and operation and maintenance evaluation. She serves as the Project Manager for the Miami Dade County Water and Sewer Department Bond Engineering and Financial Services contract as well as the Program Manager for the implementation of a new \$700M greenfield renewable energy facility in Palm Beach County, FL, which is the first of its kind in more than 15 years.

Mrs. (Richter) Torres has a diverse background in program management, business advisory and financial consulting services and civil engineering. She specializes in assisting clients with managing their planning, operational and capital program needs. Her experience includes project management and delivery, financial analysis, rate studies, vendor procurement, contract compliance, regulatory permitting, public outreach, annual reporting to bondholders/trustees, litigation support services, environmental compliance and operation and maintenance evaluation. She serves as the Project Manager for the Miami Dade County Water and Sewer Department Bond Engineering and Financial Services contract, which included most recently conducting a full-scale study of the retail rates charged to its customers and the restructuring of its rate system, as well as the Project Manager for the PortMiami Financial Services and Management Consulting contract.

### Relevant Work Experience:

#### **Broward County FL: Solid Waste and Recycling Study / Fort Lauderdale, FL**

Serves as Project Manager for the County's ongoing study focused on how to achieve the state mandated 75% recycling goal and developing a path forward for the future governance and infrastructure necessary for long-term solid waste management within Broward County.

#### **Miami-Dade County FL: Water and Sewer Department Bond Engineering Services / Miami, FL**

Serves as Project Manager for WASD's Rates, Fee Analysis, and Bond Engineering Contract. Responsible for overseeing and delivering all assignments and task orders under the multi-year contract serving WASD's Executive Leadership team. Projects and activities conducted to date include Asset Management Framework Development, Retail Rate Study, Mixed Use Customer Rate Analysis, Annual Review of the Adequacy of Rates and Fees, Annual Review of Wholesale Customer Rate Impacts and True Up, Annual Condition Assessment of all WASD Facilities, and miscellaneous other assignments for the varying divisions of the Department.

#### **City of Davis: Design Build Transactional Consulting/Davis, CA**

Served on the transactional consulting team developing the design/build agreement terms in association with the implementation of the necessary facility upgrades

needed at the City's WWTP to achieve compliance with the City's National Pollution Discharge Elimination System (NPDES) permit for surface water discharge. Activities included development of request for qualifications documents, evaluation of submittals for shortlist, preparation of key contract terms and risk matrices, as well as detailed design/build agreement for issuance to the pre-qualified vendors.

**Multiple FL Clients: Emergency Response Planning Services / FL**

Served as Deputy Project Manager and Project Engineer for the development of emergency response plans for four water utilities in accordance with the Bioterrorism Act of 2002 and USEPA Guidance. Activities included: Review of vulnerability assessment and emergency management information; kickoff workshop; development of draft emergency response information; review workshops; preparation of emergency response plan.

**Miami-Dade County FL: PortMiami Consulting Engineer's Services for Master Bond Ordinance 88-66 / Miami, FL**

Serves as Project Manager for the following financial support required by PortMiami in order to meet the requirements of Master Bond Ordinance 88-66 and established management policies which consists of reviewing unaudited quarterly financial results for Q3 and Q4 of FY2014, including a review of actual financial results in comparison to projected results; assisting PortMiami with preparation of updated FY2014 year-end financial projections given the unaudited year to date actual results, including an evaluation of reasons for any significant deviations of actual financial results from projected results, and an assessment of the impact of any deviations on ability to meet debt service coverage requirements; and participate in regular meetings with PortMiami staff to discuss financial analyses, forecast results, and other recommendations as may be required as PortMiami's Consulting Engineer for the authorized period. In addition, ARCADIS conducted comprehensive facility inspections of the entire PortMiami facility to review the state of condition and repair of the infrastructure as well as ultimately generate recommendations for repair, renewal, and replacement, and issuance of a Consulting Engineer's Report documenting the results of such inspections and associated recommendations.

**Solid Waste Authority of Palm Beach County: New 3,000 tpd Renewable Energy Facility / West Palm Beach, FL**

Serves as Principle in Charge and Program Manager for the planning, permitting, procurement, financing, public outreach and conceptual design for the overall implementation of a new 3,000-ton-per-day waste-to-energy facility adjacent to the authority's existing North County Resource Recovery Facility (NCRRF). Key activities include development of a request for qualifications and request for proposals of a design-build-operator, development of application documents required under the Power Plant Siting Act, development of a design criteria package to be utilized during the procurement process, development and implementation of an extensive public outreach program and overall program management activities to support the development of this estimated \$700M capital project, the first of its kind in more than 15 years.

## Jim Cooper, PE, ENV SP, CWO

### Modeling Technical Leader



#### Years Performing Job Title:

- 14 years

#### Professional Registration/ Certification:

- Professional Engineer, OH, WI, IN, KY, FL, VA
- Envision Sustainability Professional
- Class II Water Dist. Operator, Ohio
- D2 Water Dist. Operator, California
- Class I Wastewater Operator
- CSI Certified Construction Doc. Tech

#### Education:

- MS Civil Engineering University of Akron 2009
- BS Civil Engineering University of Akron Main Campus

#### Benefit to Broward County

**As your Technical Leader for the Modeling tasks, Jim brings extensive recent and relevant modeling experience to the County, most recently leading the modeling effort for the City of Hollywood, with a proven history of successful projects with this same core team.**

Mr. Cooper is a professional engineer and certified operator balancing technical expertise and practical field experience by leading teams to deliver innovative, practical and sustainable solutions. Jim assists clients in developing intelligent water and wastewater networks, system planning, operations, system optimization, modeling, and machine learning of conveyance and process treatment improvements.

Jim is a trustee for the American Water Works Association and has authored multiple publications at international conferences, webinars and public meetings for conveyance systems. Jim is the lead author of the new AWWA Manual of Practice 32, Computer Modeling of Water Distribution System.

#### Relevant Work Experience:

##### **Sanitary Sewer Data Program and Hydraulic Modeling / City of Canton, OH**

Technical Advisor and Task Manager of the Data Program necessary for development and calibration of a system wide sanitary collection system hydraulic and hydrologic (H&H) model throughout the 58 square mile service area to facilitate achieving an optimal level of calibration for 260 model subcatchments.

##### **Preliminary Engineering and Design of Improvements to Head Tanks System / Milwaukee Metropolitan Sewerage District, Milwaukee, WI**

Lead Hydraulic Modeler and Task Manager performing alternatives evaluation, preliminary design and implantation of improvements to the District's Inline Storage System (ISS). Project consists of analyzing hydraulic transients, planning, and designing improvements to the ISS Head Tanks System used to dewater the ISS and convey flow rates in excess of 200 mgd to two water reclamation facilities through elevated tanks and complex force mains with dewatering and air relief stations, with the goal of maximizing pump flow rates

##### **Field Data Collection Program and Development of Hydraulic Models / Los Angeles Department of Water and Power, CA**

Technical Advisor and Task Manager for implementation of a data collection program, hydraulic model development for 27 zones within the LADWP system, and development of guidance manuals and training for continued development by the client in the future.

##### **Hydraulic Model Update and Calibration / City of Hollywood, Hollywood, FL**

Project Manager and Technical Advisor for the data collection, hydraulic model conversion and update, calibration and evaluation. Tasks include analysis of diurnal demand patterns, future water demand projections, physical system improvements, field testing of pipe coefficients, model simulations and software training with development of Standard Operating Procedures and as needed remote follow-up support.

### **Combined Sewer System Hydraulic Model / Fremont, OH**

Lead engineer responsible for the development, calibration and analysis of a collection system model of the combined sewer system. Field activities included the installation and maintenance of flow monitors for the purpose of determining sources of RDII. This project included modeling of multiple wet weather collection ponds and collection system transmission pumping stations.

### **Water Master Plan and Hydraulic Model / City of Tallahassee, Tallahassee, FL**

Technical Advisor for a comprehensive water master plan update including physical system updates, water demands and patterns updates, calibration, demand projections, and evaluation of various system improvements leading to the development of a 20-year capital improvements plan.

### **Eastgate Sanitary Sewer Master Plan / City of Akron, OH**

Project engineer responsible for the review of trunk sanitary sewers in the Eastgate redevelopment area of the City (approximately 500 acres with an overall cost estimate of \$1 billion). Tasks included a condition assessment, capacity analysis, and siting for major trunk sewers along the Little Cuyahoga River and evaluated five alternatives for rehabilitation and/or replacement of the trunk sewers. The recommended alternative would replace and/or rehabilitate all trunk sewers with an approximate \$13-million construction cost estimate.

### **Water Planning Basic Ordering Agreement / Washington Suburban Sanitary Commission (WSSC), Washington DC**

Project technical advisor for multiple task orders focused on planning, modeling and optimizing the water distribution network consisting of over 5,500 miles of pipe, 86 pressure zones and 18 pumping stations.

### **Conveyance Practices Technical Assistance / Citizens Energy Group, Indianapolis, IN**

Technical Advisor recommending process improvements, technical direction on use of multiple modeling and asset management platforms, resource optimization, and assistance with internal and contract staff performing planning and modeling initiatives.

### **Water Master Plan / City of Newport Beach, Newport Beach, CA**

Task manager for the project consisting of model development, demands analysis, field data collection, model calibration, and multiple system evaluations for the current and future conditions with a risk assessment and recommendations for improvements..

## Ben Chenevy, PE

### Hydraulic Modeling



#### Years Performing Job Title:

- 6 years

#### Professional Registration/ Certification:

- Professional Engineer, OH

#### Education:

- MS Environmental Engineering  
University of Cincinnati 2013
- BS Civil Engineering University of  
Dayton 2009

#### Benefit to Broward County

**Ben brings nearly 10 years of extensive wastewater system model development and calibration.**

Mr. Chenevy is an environmental engineer with experience in water resources including drinking water, source water, collection systems, sustainability and low-impact development. He has extensive knowledge of hydraulic modeling software with analysis and design experience in all categories. He provides practical knowledge of engineering methodology, independent research, coding and development, and a wide variety of technical software and hardware. His experience with development projects includes database management, SQL servers, and VBA application design and coding.

#### Relevant Work Experience:

##### **DC Sewer Asset Management / DC Water and Sewer Authority, Washington, DC**

Provided technical assistance with GIS analysis of the horizontal assets of the entire DC sewer network. Focused on development of consequence-of-failure ratings based on numerous GIS shapefiles and databases. Designed and created models within ArcMap that could perform detailed geo-processing of data through multiple methodology revisions. Final failure ratings were joined across multiple categories for a final rank of each sewer asset. Work was part of a larger assessment that also looked at likelihood of failure and risk calculations.

##### **Sanitary Sewer Model Calibration and Analysis / City of Canton, OH**

Project engineer in sanitary sewer model development and calibration project. Focused on wet-weather calibration for the system based on RTK parameters for each monitoring area. Assessed and documented each location during calibration to track progress, meter reliability, and results during multiple calibration iterations and reviews. Also involved in the efforts to analyze and categorize current conditions based on RTK results, capacity issues, and predicted overflows.

##### **Distribution System Demand Forecasting / Confidential Client**

Technical advisor assisting in water distribution model planning efforts. Analyzed and evaluated specific upcoming construction, developed water demand estimates for each, and helped bring results back into the forecasted model.

##### **Sanitary Sewer Modeling Field Work / City of Canton, OH**

Project engineer on the field work component supporting the detailed sanitary sewer modeling for the City of Canton. Flow monitors (of several types) and rain gages were installed throughout the city for the purpose of model calibration. The data collection occurred throughout the 58 square mile service area to facilitate achieving an optimal level of calibration for 260 model subcatchments. Required site visits to download data, replace batteries, and confirm equipment operation were performed throughout the monitoring period. Additional tasks included troubleshooting software and equipment malfunctions and organization and presentation of monitor information and data.

**Milwaukee Metropolitan Sewerage District: Preliminary Engineering and Design of Improvements to Head / City of Milwaukee, WI**

Assistant engineer performing modeling and preliminary analysis of improvements to the District's Inline Storage System (ISS). Tasks consisted of analyzing hydraulics and performing alternative model runs for the ISS Head Tanks System used to dewater the ISS and convey flow rates in excess of 200 mgd to two water reclamation facilities through elevated tanks with the goal of maximizing pump flow rates.

**Distribution System Evaluations / Confidential Client**

Technical advisor for hydraulic model analysis to investigate construction impacts on local water quality. Tasks include updating the model in the evaluation area based on recent construction work, investigating typical flow paths before and during different construction efforts, and evaluations of scour and water quality during times of interest.

**Distribution System Expansion Evaluation / City of Canton, OH**

Project engineer for evaluation of existing distribution system to allow for expansion of water service area into a nearby township. An existing model hydraulic model was used to evaluate this new area by adding all proposed pipes to serve all customers and estimate peak demands based on historic local data. The evaluation assessed model attributes like velocities, pressures, and available fire flows to size pipes and provide phasing and cost estimates to the client.

**Distribution System Water Quality Modeling and Analysis / City of Akron, OH**

Project engineer for water quality model development and analysis that builds off previous hydraulic model development. Tasks include analysis of data from extensive sample efforts performed routinely by the city, research and calibration of chlorine decay modeling using methods that best match field data and recent advancements in fluorescence measurements, investigation into tank mixing effects, analysis of model predicted THM formation, investigations into water age and mitigation strategies, and analysis of water bleeder locations and improvements to reduce costs while maintain water quality.

## Lauren DaChunha, EI

### Hydraulic Modeling



#### Years Performing Job Title:

- 9 years

#### Professional Registration/ Certification:

- Engineering Intern - FL

#### Education:

- BS Civil Engineering University of South Florida 2014

#### Benefit to Broward County

Lauren brings a combination of hydraulic modeling, design and condition assessment experience to the County, all within the state of Florida.

Ms. DaCunha's experience is primarily focused on water and wastewater related design projects, water distribution modeling and infrastructure condition assessments. Specifically, she has assisted in several condition assessments, design calculations, data collection and analysis, completed basic CAD work, completed hydraulic analysis of several water distribution systems, and created GIS maps/figures, developed cost estimates and assisted in report, specification and contract writing, and permitting and funding applications.

#### Relevant Work Experience:

##### Reverse Osmosis Water Treatment Plant Carbon Dioxide Feed System Replacement / City of Venice, FL

As part of the Carbon Dioxide Feed System Replacement project for their Reverse Osmosis Water Treatment Plant, performed preliminary take offs and put together a cost estimate for the Carbon Dioxide Feed System Replacement.

##### Pinebrook Booster Station Evaluation /City of Venice, FL

The City of Venice owns and operates the Pinebrook Booster Station, this facility includes a 1.5 million gallon ground storage tank and two vertical turbine pumps. The original design of the pump station included autonomous control, but this control does not work effectively and this results in control issues when running with the water treatment plant's high service pumps. As part of the modeling and design for this project, calibrated the City of Venice's hydraulic model, evaluated alternatives for the control issues for the Pinebrook pump station and presented solutions in a report for the City.

##### Eastside WRF Permit Renewal / City of Venice, Venice, FL

The City of Venice owns and operates the Eastside Water Reclamation Facility in Venice FL. The facility operates under Florida Department of Environmental Protection Permit No. FL0041441, which expires on December, 11 2016. The City of Venice asked Arcadis to provide the engineering services to obtain a renewal of their domestic wastewater operating permit. As part of this work, gathered necessary data for the permit renewal, prepared and submitted the required FDEP permit renewal application forms, updated the Capacity Analysis Report and the Operation and Maintenance Report for the City.

##### Model Update and Calibration / City of Hollywood, FL

Arcadis was tasked with upgrading the City of Hollywood's hydraulic water model to better represent the existing system. As a part of this model update and calibration, completed field C-factor and Hydrant testing in the City of Hollywood water distribution system with City staff. Assisted in the analysis of field data and existing SCADA data to determine a calibration day for the model. Reviewed population projection data up to the projected 2040 planning horizon and gathered proposed system improvements to be implemented into the model to apply demand for current and future scenarios and model calibration to provide the City with a realistic planning tool for the future.

### **Design of Ellisville WWTP, Lift Station and Force Main / Columbia County, FL**

In support of the facility's permit renewal effort, developed permit package components. This includes creating GIS maps/figures of the flood prone areas of the WWTP service area and other figures required for the permit.

### **2015 Master Plan Update / City of Tallahassee, FL**

The City of Tallahassee uses an average of approximately 35 mgd from approximately 30 active wells. The distribution system includes more than 1,200 miles of piping and eight elevated storage tanks. Responsibilities on the master plan update project included reviewing, updating, and calibrating the existing hydraulic model using InfoWater; developing water demand projections for the next 20 years; evaluating the current water distribution system and water production capacity; developing alternatives for meeting increased water demands until 2035; and assembling the 20-year CIP and water master plan update report for the City.

### **Vertical Asset Conditions / Tohopekoliga Water Authority, Kissimmee, FL**

Entered information from field investigations assessment sheets for 5 water and wastewater treatment plants, contacted manufacturers, obtained information and helped develop cost estimates for the associated equipment.

### **JEA Large Diameter Pipeline Evaluation and Replacement Program / JEA, Jacksonville, FL**

In support of the evaluation, assisted in determining the pipelines that needed replacement using GIS software, worked on the design of a pigging operation to clean a large portion of WW forcemain, also participated in the evaluation of some specific large-diameter pipelines using BEM testing.



## Christopher Ranck, PE, D.WRE, BCEE, ENV SP Transient Modeling (Surge)



Mr. Ranck specializes in hydraulics and watersheds, including planning, modeling and design for wastewater, water and stormwater projects. He has particular expertise in hydraulic and water quality modeling, tunnel surge and air movement modeling, value engineering, combined sewer overflow (CSO) regulatory compliance and Long-Term Control Plan (LTCP) development, green infrastructure (GI) master planning, total maximum daily load (TMDL) development, pipeline condition assessment, and preliminary design. He was the first person in the state of Indiana to be awarded both the Diplomate of Water Resource Engineering (D.WRE) certification from the American Academy of Water Resources Engineers and the Board Certified Environmental Engineer certification from the American Academy of Environmental Engineers.

### Relevant Work Experience:

#### Years Performing Job Title:

- 17 years

#### Professional Registration/ Certification:

- Professional Engineer – HI, IN
- Board-Certified Environmental Engineer – U.S.
- Envision Sustainability Professional – Institute for Sustainable Infrastructure
- Diplomate, Water Resources Engineer

#### Education:

- MS Engineering University of Michigan-Ann Arbor 2002
- BS (Summa cum Laude) Civil and Environmental Engineering University of Michigan 2000

#### Benefit to Broward County

With more than 15 years of hydraulic modeling experience, Chris leads Arcadis community of practice for Integrated Planning as well as WEF's technical practice group for collection system modeling.

#### DC Water: Potomac Interceptor Transient Evaluation, Washington, DC

As part of the sanitary program management team, served as a technical lead for a transient and air movement evaluation of the Potomac Interceptor in DC Water's collection system. The Transient Analysis Program (TAP) model developed by Applied Science, Inc. was used for the transient evaluation with a post-processing spreadsheet tool to evaluate air movement and potential pressurization. Evaluated alternatives to improve the hydraulic capacity and minimize the effects of trapped air in the interceptor.

#### City Utilities Engineering: 3RPORT Tunnel Hydraulic Modeling Oversight, Fort Wayne, IN

Currently serving in a technical oversight role for the design support hydraulic modeling for the Three Rivers Pollution and Overflow Relief Tunnel (3RPORT) and associated consolidation and connection infrastructure. Oversight has included focused reviews of surge and air movement modelling performed by the design team. The deep tunnel is the critical element of Fort Wayne's CSO LTCP. Utilized the spreadsheet post-processing to evaluate potential air induction, pressurization, and migration based on the preliminary hydraulic modeling of the 3RPORT performed by others.

#### Metropolitan Sewer District of Greater Cincinnati: Lower Muddy Creek Interceptor SSO Remediation, Cincinnati, OH

Served as technical lead and technical reviewer for the transient and air movement evaluation of a SSO remediation project for the Lower Muddy Creek interceptor. Since the recommended project included sealing low-lying manholes near the Ohio River, the transient analysis was necessary to confirm that the sealed system would not be at risk for overflows due to transients or damage to interceptor or structures from trapped air. The analysis determined that potential surge or air pressure was negligible.

#### Citizens Energy Group: Tunnel Surge Evaluation, Indianapolis, IN

Project manager and local technical lead for the systemwide tunnel surge evaluation using the Transient Analysis Program (TAP) model developed by Applied Science,

Inc. Specific tasks included the sizing of surge mitigation structures, ventilation analysis, development of the tunnel operational scheme, and coordination with the tunnel design teams. Served as technical reviewer for the 2014 update to the surge model. The update included design configuration changes and evaluate the potential for passive overflow and ventilation facilities.

In 2015, developed a spreadsheet post-processing tool to evaluate potential air induction, pressurization, ventilation, and migration in surcharged conditions based on current research in air movement in closed conduits.

In 2016, provided oversight and review for a focused evaluation on air movement and ventilation, with Auburn University as a sub-consultant using their state-of-the-art HAST2 model. The evaluation focused on leading research in numerical simulations of two phase (air/water) modeling of the tunnel to further characterize the geyser risk.

**Citizens Energy Group: Tunnel Ventilation Air & Odor Dispersion Analysis, Indianapolis, IN**

Project manager for an air dispersion evaluation of a tunnel ventilation shaft for Citizens' CSO tunnel. AEROMOD modeling was performed to evaluate the potential impacts of H<sub>2</sub>S and ammonia from combined sewage captured by the tunnel. The project included evaluating the sensitivity of the results to multiple emission rate methods, benchmarking against other CSO tunnel systems, and benchmarking of local and national odor and health standards for H<sub>2</sub>S and ammonia.

**New York City Department of Environmental Protection: East Side Coastal Resiliency Project, New York, NY**

Provided hydraulic modeling support to evaluate the potential impacts of pressurized air on New York City's combined sewer regulators and outfall pipes, since the resiliency project will seal the outfall pipes as part of the flood-proofing of the collection system. Utilized NYC DEP's hydraulic model, with focused post-processing to evaluate the risks of transients, air pocket formation, air pocket migration, and negative pressures.

**Citizens Energy Group: Tunnel Operational Plan Development, Indianapolis, IN**

Currently serving as project manager and technical lead for the development of a desktop tunnel operational plan for Citizens' 25-mile long, 18' diameter CSO tunnel network. The operational plan includes considerations for surge mitigation, flushing, dewatering, instrumentation, SCADA connectivity, and ventilation. The desktop phase also includes coordination with the collection system and treatment plant operational staff and a review of current operational practices by peer utilities.

**Thames Tideway Tunnel Company: Thames Tideway Tunnel Due Diligence Review, London, UK**

Served as US-based project manager for the independent due diligence review of the Thames Tideway Tunnel (TTT) to facilitate the funding of the tunnel construction and associated works by outside investors. ARCADIS staff based in London. Provided technical review for tunnel hydraulics, transient and air movement, and the overall O&M plan. The technical reviews included a focused 9-day working session in London in February 2015. Served as a key author to the following sections of the Stage 2 and Stage 3 Vendors' Due Diligence Reports: Design & Technical, Project & Program, O&M, and Commissioning.

## Venessa Brabant

### Transient Modeling (Surge)



#### Years Performing Job Title:

- 4 years

#### Education:

- MS Civil & Environmental Engineer  
Clarkson University 2015
- BS Environmental Science SUNY  
College at Plattsburg

#### Benefit to Broward County

**Venessa brings a well-rounded mix of modeling and asset management experience, supporting teams and clients throughout the country.**

Ms. Brabant is a Staff Engineer supporting water, wastewater and stormwater projects in the north eastern United States. Her MS research focused on anaerobic digestion and has hands on experience operating a pilot-scale anaerobic digester to optimize process control and nutrient recovery technologies. Ms. Brabant is the local chair of the NYWEA Young Professional's committee..

#### Relevant Work Experience:

##### **Northern Kensico-Bronx Pipeline - Alternative Water Supply / Westchester County, Yonkers, NY**

Assisted PE with modeling water supply pipe flow and pressure head in Hammer to evaluate the effect of operational changes.

##### **Asset Management Cohoes, Watervliet, Green Island / Capital District Regional Planning Commission, Albany, NY**

Anaerobic digestion of high strength food waste from Clarkson University campus dining halls including pre- and post-consumer waste. Operation of a 2-stage, 2-phase mesophilic process produced biogas that was sent to a Cogenerator to produce combined heat and power.

Nutrient recovery from digested food waste effluent for use as a fertilizer. Nutrient processing included: air stripping, acid scrubbing, chemical oxidation, UV disinfection, and microfiltration. Optimizing nutrient recovery process to make it economically competitive with commercial organic fertilizers.

Operation of a pilot-scale aeroponic-based greenhouse for year round food crop production. Greenhouse emphasized sustainability using a fine nutrient water mist to deliver nutrients directly to plant roots. Passive solar south wall design supplemented with high efficiency blue and red wavelength LED lights. Heated using a boiler powered by solar cells and supplemented with wood pellets.

Control and automation of a pilot-scale digester and pilot-scale greenhouse using ladder logic in master-slave programmable logic controllers connected with Modbus configuration. A data acquisition system built on campus called Mango, allowed for remote access to all monitored and controlled equipment.

##### **2013-2014 Lehigh MSA / Lehigh Cement Company, Catskill, NY**

Assisted PE with site assessment of stone quarry pumping stations and writing technical memorandum and analyzing discharge and flow characteristics in WaterCAD.

##### **Feasibility Study of Anaerobic Digesters at State University Campuses / State University of New York Construction Fund, Albany, NY**

Assisted PE with digester technology assessment, feedstock analysis, permitting procedures, and design.

## Greg Osthues, PE

### Condition and Risk Assessment Technical Leader



#### Years Performing Job Title:

- 31 years

#### Professional Registration/ Certification:

- Professional Engineer - NY

#### Education:

- MS Environmental Engineering 1994
- BS Civil Engineering 1987

#### Benefit to Broward County

**Greg brings extensive pump station and force main condition and risk assessment experience from across the country, using traditional and innovative techniques, which result in a comprehensive risk-based capital plan.**

Mr. Osthues is a national Technical Director for water and wastewater and brings extensive experience in the assessment and prioritization of utility infrastructure including treatment plants, pumping stations, wastewater collection, force mains and water distribution systems. He is an asset management specialist and has served as technical lead for the development of condition and risk assessment programs for risk-based capital planning of complex infrastructure across the Country. He has authored articles and presented on asset management topics for the Utility Management Conference, the International City/County Management Association, and the Water Environment Federation.

#### Relevant Work Experience:

##### **Large Diameter Pipeline Evaluation and Replacement Program / JEA, Jacksonville, FL**

Technical lead for development and implementation of non-destructive testing (NDT) program for over 900 miles of large diameter pipelines (gravity sewers, force mains and water transmission mains). NDT technologies include CCTV, sonar, ultrasonic, electromagnetic and acoustic. Overall program includes desk-top risk assessment to select candidate pipelines, NDT program planning, field oversight, data management and results review. Based on risk and NDT results, business cases are prepared for renewal/replacement alternatives and inclusion in the capital improvement program.

##### **Pleasant Run Central Force Main Assessment / Cincinnati MSD, Cincinnati, OH.**

Technical lead for field assessment techniques and strategies for the condition and risk assessment of 6,945 feet long, 24-inch diameter force main made of steel and ductile iron. NDT techniques included, cathodic protection system and air release valve inspections, ultrasonic testing at exposed vaults and structures, Pure Technologies Sahara® Tool for full length leak detection and air pocket location followed by Rock Solid's broadband electromagnetic wall thickness (BEM) testing in suspect areas. NDT results were normalized for condition scoring and remaining pipe wall life to integrate with MSD's infrastructure risk model to develop a schedule for re-inspection and phased replacement. Quality review for preparation of emergency response plan (ERP) with policies and procedures for response to force main failure.

##### **Asset Management Program – Water and Wastewater / Lee County, Fort Myers, FL**

Asset management task leader for development of asset condition, criticality and risk assessment methodology for water, wastewater and reclaimed water systems, including: a water plant, wastewater plant, 33 lift stations, 50 miles of sewer and 60 miles of water and reclaimed water distribution. Activities included: development of asset hierarchy, development of assessment methodologies and guidelines with LCU staff, field collection of asset inventory and condition assessment data, criticality evaluation and risk analysis. Results were used to develop estimates of asset effective life and to develop business cases for a prioritized 10-year CIP.

### **Asset Management Program – Water and Wastewater / Toho Water Authority, Kissimmee, FL**

Asset management task leader for development of condition assessment and risk methodology for pilot asset management program involving a wastewater treatment plant, water treatment plant and 47 lift stations. Facilitated workshops with Toho staff to develop customized guidelines for the assessment methodology. Directed the field asset inventory and condition assessment process, including data management and quality assurance. Facilitated workshops to review results and to develop overall risk assessment and the long-term asset renewal and replacement needs.

### **WPCF Asset Management Program and 25-Year Capital Needs Assessment / The Metropolitan District Commission, Hartford, CT**

Technical lead for development of the District's asset management program including: water distribution, storage and 45 booster stations, wastewater collection, 54 lift stations and four wastewater treatment plants. Program development utilized the ISO 55000 framework and gap analysis and included development of service levels, standard operating procedures for condition, criticality and risk assessment, maintenance program evaluation and business case templates for capital project prioritization.

### **Asset Management Plan for Department of Public Utilities / City of Columbus, OH**

Technical lead for overall risk assessment across DPU's complete asset base, including water, sewer (treatment plants and pump stations) and electric. Responsible for leading work group composed of DPU staff from each utility to develop Standard Operating Procedures for condition assessment, consequence of failure, risk and monetized triple bottom line asset evaluations — including DPU wide condition assessment. . Key activities include: asset hierarchy development, implementation of the condition assessment capabilities within WAM®, implementation of reliability centered maintenance principles for predictive and preventive maintenance, including tracking and reporting failure modes, improvements in inventory management and reporting enhancements.

### **Asset Management Program and Water Master Plan / Greater Cincinnati Water Works, OH**

Task leader for the facilities audit portion of overall water master plan, including condition assessment at GCWW's two water treatment plants and remote facilities involving over 3,000 assets. Developed 10-year capital improvement program for asset renewal and replacement at each water plant, booster station and storage reservoir.

### **Risk Assessment and Asset Management Program / New York City Department of Environmental Protection (NYCDEP), NY**

Subject matter expert and project lead for development of global risk assessment methodology for use by the three Operating Bureaus within NYCDEP for all wastewater treatment, water supply and water distribution assets in support of capital planning. Risk assessment methodology includes physical and performance condition assessment for mode and probability of failure combined with consequence of failure evaluation. Responsible for developing risk assessment methodology based on International Infrastructure Management Manual® guidelines and adapting for NYCDEP's specific asset base including conducting workshops to build consensus across the Bureaus on the approach and resulting capital plan.

## Brian Duane, PE

Master Pump Station Assessments Mechanical Engineering



Mr. Duane's experience includes the design of more than 50 water and wastewater pumping facilities ranging in size from under 1 million gallons per day (mgd) to 450 mgd. He is a technical expert in hydraulics, pumping systems and the design of mechanical process systems, and he routinely provides assistance with start-up and troubleshooting of mechanical systems. Throughout his career, Mr. Duane has partnered with clients to provide cost-effective solutions that are functional, practical, maintainable and constructable. He offers exceptional value to clients based on his proven track record of practical design; history of successful project execution and completion; and understanding of the client's needs during the construction, start-up and post-construction phases of the project. Mr. Duane establishes strong working relationships with each client's staff so that the project team can understand and address the client's desires and requirements.

### Years Performing Job Title:

- 37 years

### Professional Registration/ Certification:

- Professional Engineer - GA, NY, TX

### Education:

- BS Mechanical Engineering Georgia Institute of Technology-Main Campus 1981

### Benefit to Broward County

**Brian brings more than 35 years of wastewater pumping station experience, providing technical expertise in hydraulics, pumping systems and innovative troubleshooting.**

### Relevant Work Experience:

#### **Avenue V Pump Station Pump Performance Testing / New York City Department of Environmental Protection, Brooklyn, NY**

Conducted a performance retest of a 350-hp submersible KSB pump in Halle, Germany. The pump failed to meet performance requirements. Subsequently retested a modified 350-hp submersible KSB pump, which passed the test.

#### **Beaver Ruin Pump Station Odor Control / Gwinnett County Department of Water Resources, Lawrenceville, GA**

Designed 24,000-cfm bioscrubbers for the Beaver Ruin pump station.

#### **Beaver Ruin Pump Station Odor Control / Gwinnett County Department of Water Resources, Lawrenceville, GA**

Designed 24,000-cfm bioscrubbers for the Beaver Ruin pump station.

#### **Beaver Ruin Pump Station Upgrade / Gwinnett County Department of Water Resources, Lawrenceville, GA**

Participated in multiple projects to fix problems in a 31-mgd wastewater pump station:

Hydraulic modeling and forensic investigation of a two-stage, 31-mgd wastewater lift station. Forensic analysis included metallurgical analysis of broken pump shafts and physical hydraulic modeling of the wet well and inter-stage transfer piping. The project involved hydraulic modeling to assess the impact of changing the hydraulic grade at the end of the force main.

**Phase 1 Project:** Design of hydraulic improvements to inter-stage piping to fix a hydraulic issue identified during scale model testing.

**Phase 2 Project:** Design and construction of wet well improvements to correct hydraulic deficiencies identified by scale model hydraulic testing. Design of wet well FOG dispersion system and odor control improvements.

**Phase 3 Project:** Design of new second stage pump station and hydraulic separation of the first and second stage systems. The project involved the installation of eight 700-hp horizontal non-clog pumps with medium-voltage VFDs and required extensive hydraulic and surge modeling.

**Bob Wentz Park at Windy Point Lift Station / Travis County, Austin, TX**

Designed a 45-gpm duplex grinder pump station and 63-gpm pressure dosing lift station for a recreational park.

**Bogan Road and Rockbridge Road Pump Station HVAC Designs / Gwinnett County Department of Water Resources, Gwinnett County, GA**

Designed ventilation for the pump rooms and AC and heating for the electrical rooms at the Bogan Road and Rockbridge Road pump stations.

**Booster Pump Station No. 2 / Uplands Development Corporation, Bee Cave, TX**

Design engineer for a 2,100-gpm firm capacity potable water booster pump station with provisions for future expansion to 5,300 gpm.

**Brooks Road Booster Pump Station and Force Main / Gwinnett County Department of Water Resources, Lawrenceville, GA**

Conducted master planning for three primary lift stations, two in-line booster pump stations and a 28.5-mile force main. Participated in design and construction of one in-line booster station and upgrade of one primary station. The in-line pump station has three 13.5-mgd, 600-hp, vertical non-clog pumps with medium-voltage VFDs. The primary lift station was upgraded by installation of two-stage pumps consisting of 12-mgd submersible wet well pump and dry well submersible pump connected in series. The project included extensive hydraulic and surge modeling.

**Brooks Road Booster Pump Station HVAC Design / Gwinnett County Department of Water Resources, Lawrenceville, GA**

Designed ventilation and heating of the pump room and AC of the electrical room for three 600-hp VFDs.

**Brooks Road Booster Pump Station Pump Performance Testing / Gwinnett County Department of Water Resources, Lawrenceville, GA**

Performance tested three 600-hp, vertical non-clog Flowserve centrifugal pumps in Taneytown, Maryland. The pumps passed the performance test but failed a mechanical test (bearing temperatures).

**Brooks Road Pump Station Chemical Feed System / Gwinnett County Department of Water Resources, Lawrenceville, GA**

Design manager for a bioxide storage and feed system for odor control at a 27-mgd pump station.

## Vinnie Vitale, PE, LEED AP

### Master Pump Station Assessments HVAC



#### Years Performing Job Title:

- 30 years

#### Professional Registration/ Certification:

- Professional Engineer - MA, NJ, NY, PA, PR, RI
- Leadership in Energy and Environment Design Accredited Professional

#### Education:

- BS Mechanical Engineering Manhattan College 1988

#### Benefit to Broward County

Vinnie brings 30 years of experience in the design and engineering of HVAC systems, most recently part of the team responsible for the design of the City of Hollywood's high service pump station rehabilitation.

Mr. Vitale specializes in the design and engineering of heating, ventilating, and air conditioning systems for commercial and industrial applications. He has participated as a team member on value engineering projects related to HVAC system cost saving measures. He has also led the mechanical system designs on sustainable projects registered with the US Green Building Council LEED program. He is experienced in the design of systems using steam, hot water, chilled water, refrigerant, electricity, gas, and fuel oil. Mr. Vitale is responsible for designs in boiler and chiller systems, built-up and packaged central station air handling systems including constant and variable volume, heat recovery systems, industrial ventilation, cooling towers, exhaust and dust collection systems, HEPA filtration systems, laboratory HVAC systems, computer room AC systems, clean room air systems, and associated direct digital control systems. He is also experienced in the design of odor control systems including carbon adsorbers, wet scrubbers, fiber glass reinforced plastic (FRP) fans and duct systems, FRP covers, associated chemical systems, and controls.

#### Relevant Work Experience:

##### High Service Pump Station Upgrades / City of Hollywood, Water Treatment Plant – Hollywood, FL

Responsible for the HVAC design upgrades for the rehabilitation of the High Service Pump Station. The project includes ventilation, heating and control system upgrades to support new pumps and VFDs associated with the upgrades to the pump station that was originally built in the early 1970's.

##### WPCF Wet Weather Expansion Project / Hartford MDC, Hartford CT

Responsible for the HVAC design of a new Influent Pumping Station and Headworks facility at an existing WPCF. Responsibilities included the design of a central hot water heating plant consisting of modular high efficiency condensing boilers and associated hydronic heating distribution system. Design of air conditioning systems for electric and control rooms. Design of PLC based HVAC control systems and integration with the plant wide fiber optic HVAC control system. Also provided an equipment evaluation comparing simple payback associated with condensing boilers and heat pumps coupled to vertical ground loop wells.

##### Pine Hill Water Treatment Pump Station Improvements / Erie County Water Authority, Buffalo NY

Responsible for the HVAC design upgrades for the rehabilitation of the Pine Hill Pump Station. The project includes ventilation, heating and control system upgrades to support new pumps and VFDs.

##### WPCF Capital Needs Assessment / The Metropolitan District, Hartford, CT

Arcadis completed a 25-year capital needs assessment for the Metropolitan District's four water pollution control facilities located in Hartford, East Hartford, Rocky Hill, and Windsor, Connecticut. Responsibilities included HVAC system inventory and condition assessments at 62 buildings.



### **GAC Water Filtration Facility / Newburgh, NY**

Responsible for the HVAC design of a new granulated activated carbon filtration facility. Design included gas fired radiant heating systems, desiccant dehumidification system, ductless split system air conditioning, and controls.

### **Deer Island Treatment Facility (DITP) / Massachusetts Water Resource Authority (MWRA), Boston, MA**

The DITP was constructed in the early 1990's and treats 1.3 billion gallons per day peak flow from 43 greater Boston communities. HVAC controls and equipment have reached their useful life or have deteriorated and require evaluation and replacement. As project manager and lead HVAC design engineer for the Building Automation System and HVAC Unit Replacement contract.

### **Bay Park Wastewater Treatment Facility / Nassau County, NY**

Responsible for the HVAC design associated with a 30% design engineering package for the Dewatering and Effluent Pump Station buildings that were flooded as result of Super Storm Sandy. The design package was used by Nassau County to generate a request for proposal (RFP) for a 100% design and bid package for upgrades to the buildings. The design incorporated strategies for protecting the HVAC and Odor Control systems from damage associated with potential future flood events.

### **Cedar Creek WPCP Influent Screens Facility Improvements / Nassau County, NY**

Responsible for the HVAC design upgrades of an existing screenings facility. Responsibilities included the temporary ventilation system design for facility operation during construction. Modifications to the odor control exhaust distribution system. Design of a 100% outside air heating and ventilating system and associated supply air distribution system. Hydronic pumping and distribution system design for supplying hot water to the facility from the plant wide campus loop. Air conditioning system design for the electrical room. PLC based HVAC control system design for the entire facility.

### **Sturgeon Point Water Treatment Plant GHD 6B HVAC Upgrades / Erie County Water Authority, Buffalo, NY**

Responsible for the HVAC design upgrades at the Sturgeon Point Treatment Plant. The project includes air conditioning of the electric room associated with the pumps in the Delivered Water Pump Station, ductwork modifications, rooftop air conditioning units and control system. The project also included fans, louvers and control systems in the chlorine room, quonset Hut, and flocculation building.

## Joan Fernandez, PE

Force Main Assessment / Master Pump Station Assessments Civil / Comprehensive Capital Master Plan / Emergency Response Planning



### Years Performing Job Title:

- 14 years

### Professional Registration/ Certification:

- Professional Engineer - FL, MD

### Education:

- MS Environmental Engineering 2007
- BS Environmental Engineering 2004

### Benefit to Broward County

Located just minutes from the County offices, Joan brings extensive Broward County and local wastewater collection and asset management experience, most recently serving as project manager for a forcemain crossing study for the County.

Joan has particularly thorough expertise in the areas of water distribution, wastewater collection and reclaimed water systems. As a principal engineer, she has demonstrated skills in various aspects of consulting engineering and specializes in project management. She has worked closely with various agency staff at all levels, consultants, and contractors in conducting contract negotiations, presentations, workshops, and project implementation and management. She also has assisted with permit acquisition for various projects and provided services during construction.

### Relevant Work Experience:

#### **Broward County: Alternatives Analysis for Intracoastal Waterway Force Main Crossing Replacement / Broward County, FL**

BCWWS operates four retail lift stations that discharge to Master Pump Station 220 (MPS 220). The wastewater is repumped through a 16-inch force main that crosses the Intracoastal Waterway (IWW) to emerge in the city of Lighthouse Point. The force main is the only transmission main in place to cross the IWW, and the county has concerns regarding the condition of the force main and the potential environmental impacts of raw sewage release to the IWW in the event of a pipe failure. Served as project manager and provided QA/QC for a study whose objective was to establish an alternative means of transmitting wastewater from the barrier island. Several conceptual routing alternatives were evaluated to establish a feasible redundant force main transmission corridor.

#### **City of Sunrise: Escape and Valencia Force Main Pipe Bursting / Sunrise, FL**

Senior Project Manager. Prepared construction documents and associated permits for the replacement of over 2,000 lf of force main in communities of Escape and Valencia. The project consisted of pipe bursting existing aging force main and replacing with an 8-in pressure tested HDPE main. Post design services included Construction Observation assistance, assistance with certificate of completion and assistance with requests for information during construction.

#### **City of Sunrise: Sawgrass Aquifer Storage and Recovery Project / Sunrise, FL**

Design Manager. Assisted with the design coordination between disciplines to finalize the design drawings and specifications needed. The scope of the project includes the design and permitting for conversion of one Floridian well near the Sawgrass Utility Complex to ASR well. This system will store fresh water from the Biscayne Aquifer in the ASR well for recovery during the periods of high water demand, allowing the City to fully utilize its fresh groundwater before having to treat the brackish Floridian supply.

#### **North District Wastewater Treatment Plant Pump Station Improvements Program / Miami-Dade Water and Sewer Department, Miami, FL**

As project manager for the North District Wastewater Treatment Plant (NDWWTP) replacement and renewal contract, led the preliminary design for five regional pump stations (301, 414, 415, 416 and 417) that feed the NDWWTP. The work included an inspection of the facility and preparation of a BODR to clearly identify the necessary improvements relative to the requirements of the consent decree and the restoration of

long-term reliability to the station. As part of the existing facility assessment, a hydraulic evaluation was conducted to assess the range of head and flow conditions associated with the pump station's system and to develop associated system curves to be used in the evaluation of pumping equipment (existing and new) for the station.

**City of Sunrise: Lift Stations 114, 123, 125, 132 and 148 Rehabilitation / Sunrise, FL**

As task order manager, led the conversion design of five sanitary lift stations from wet/dry pit to wet pit submersible pumps. The design included hydraulic modeling to establish design conditions and pump selection and overcoming site space constrictions, resulting in improved security, accessibility and aesthetics at each site.

**Pump Station Improvements Program / Miami-Dade Water and Sewer Department, Miami, FL**

As project manager, led the design team for pump station improvements program (PSIP) projects including upgrades to the MDWASD Wastewater Collection and Transmission System (sanitary sewer collection system, pump stations and force mains).

## Christopher Heltzel, GISP

Master Pump Station Assessments Force Main Assessments



### Years Performing Job Title:

- 31 years

### Professional Registration/ Certification:

- Geographic Information Systems  
Professional - OH

### Education:

- MA Engineering Technology Kent State  
University 1987
- BS Aerospace Engineering Kent State  
University 1986

### Benefit to Broward County

**Industry leader in our Proven Tools,  
Chris brings more than 30 years of  
GIS experience with a particular focus  
on supporting asset management and  
capital planning efforts around the  
country.**

Mr. Heltzel specializes in information management and application development related to asset management. He has extensive experience in managing Information Technology (IT) projects, including implementations of geographic information systems, computer-aided design software, hydraulic modeling, computer maintenance management systems, financial information systems and condition assessment software. Additional experience includes custom and retail software development, Local Area Network and Wide Area Network design and administration, corporate email and relational database administration.

### Relevant Work Experience:

#### City of Sugar Land, Water Main Replacement Planning, Sugar Land, TX

Data Management Task Lead on the risk based replacement plan for approximately 500 miles of water mains serving the City of Sugar Land residents. The project included the establishment of service levels to define pipe end of life, an evaluation of past failure history to determine the likelihood of failure by pipe cohorts, as well as an analysis of the social, environmental and financial impacts of pipe failure to assign the consequence of failure. A tool built in ESRI GIS the Arcadis renewal and replacement planning system, RRPS, was used to complete the short and long term needs analysis and training and transfer was provided to City staff for future updates.

#### Asset Management and CIP Planning Services / The Metropolitan District, Hartford, CT

As part of the MDC asset management project, a model has been produced to predict the useful life of the water distribution infrastructure and to develop a 50-year rehabilitation and replacement R&R budget. This asset model requires supporting data from many sources including the SAP maintenance tracking system, geographic information system, hydraulic model and spreadsheets. From these disparate sources the data relevant to the asset model must be extracted, transformed and loaded ETL into the asset model. GIS was targeted as the platform for the ETL application because much of the data is related spatially. Examples include relating soil condition to the pipes residing within defined areas and aggregating multiple connected pipes with similar characteristics. Additionally the asset model results must be displayed through the GIS to facilitate execution of the R&R plan. Mr. Heltzel designed the GIS-based ETL program that allows the user to specify up to 15 different data sources to be processed. Each source is validated prior to processing and warnings are generated if discrepancies are present in the data. In most cases, problematic data sources can be skipped, allowing the remaining sources to be processed. The user is then only required to correct the discrepancies and process those remaining data sources instead of rerunning the entire ETL program from start to finish. This asset model pre-processing application allows MDC to effectively collect, validate and review the supporting data prior to running the model.

### **Dallas Water Utilities: Interceptor Physical Assessment, Dallas, TX**

In 2010, Dallas Water Utilities (DWU) retained Arcadis to perform a condition, consequence of failure and risk assessment of large sewer interceptors in the City of Dallas to assist in rehabilitation and replacement (R&R) planning efforts as well as to direct future condition inspections. The project team conducted workshops to establish asset management methodology for consequence of failure, physical and performance condition, and risk for all sewer pipes. The team developed GIS and hydraulic model data queries to assign scores in GIS, and wrote guide documents for scoring. InfraMetrix's zoom camera, traditional closed-circuit television and RedZone® Robotics technologies were used in the field to assist in determining pipe physical condition and defects in the high-risk sewer interceptors. Served as architect of the capital project prioritization tool and scoring criteria to evaluate pipe based on triple-bottom-line criteria.

### **Lee County: Asset Management Plan, Fort Myers, FL**

Led the information management component of this project. The project included a review of the utilities' geographic information system (GIS) and their Computerized Maintenance Management Systems (CMMS). Provided additional technical support for the quality assurance/quality control of sewer video inspection data and its integration within the utilities GIS. The existing asset information was extracted from the systems and utilized to support the asset management plan. Presented the recommendations for enhancement of the GIS to better support the ongoing asset management.

### **Asset Management Program Planning, Central Arkansas Water, Little Rock, AR**

Mr. Heltzel led the assessment of critical information systems and data that support asset management. This effort was an integrated part of a larger risk-based asset management program (RBAM), and the enhancement recommendations aligned with ongoing implementation efforts. Recommendations were based on discussions with CAW staff and an analysis of current systems and data. The CMMS/GIS combination of Cityworks and ArcGIS are the primary asset management software products that were evaluated. The assessment included a data gap analysis, consistency analysis, geometric connectivity analysis (horizontal assets) and a hierarchy analysis (vertical assets). The gap analysis identified attributes that are empty or if a field does not exist to store data typically useful for asset management. Data inconsistency is identified where two or more attributes do not agree with each other. Geometric connectivity analysis is based on the link-node relationship of piping while a hierarchy assessment is based on a parent-child relationship of logical asset grouping. The result of this project was a roadmap for the formal implementation of an asset management program.

### **Asset Management / City of Newark, OH**

This pilot project demonstrated the effectiveness of using an integrated decision support system in conjunction with the collection of asset condition data to produce a defensible capital improvements plan. Newark's GIS/CMMS provided repair history and asset attributes for 6.9 miles of sewer and 2.3 miles of water pipe by which deterioration curves were created for each material in use. Sewer condition data was provided by InfraMetrix utilizing a zoom camera system in conjunction and WRc structural and operational ratings. The Harfan asset model was used to assign each pipe a deterioration level and to predict the ideal time for rehabilitation or replacement R&R. A sample 20-year capital improvement plan was developed for this pilot area with the integrated water and wastewater model that optimizes the R&R schedule by considering the proximity of the two systems assets to each others.

## Celine Hyer, PE

### Prioritization and Capital Planning Technical Leader



#### Years Performing Job Title:

- 29 years

#### Professional Registration/ Certification:

- Professional Engineer - FL

#### Education:

- MS, Engineering Management, Florida Institute of Technology, 1989
- BS, Chemical Engineering, Florida Institute of Technology, 1988

#### Benefit to Broward County

**Celine brings extensive water utility and consultant experience in creating and managing capital programs in excess of \$100 million including best in class project prioritization methods.**

Ms. Hyer is the Arcadis US leader for Conveyance systems and is risk based planning specialist with over 18 years of combined experience working at a utility and as a consultant. She has supported the implementation of numerous risk based capital plans across the country including large utilities such as New York City DEP, San Diego Water, DC Water and Columbus Department of Public Utilities. These projects have included condition and risk assessments for treatment plant, pumping stations and pipe assets encompassing over 2,500,000 assets. Her comprehensive planning programs have also included strategic planning, service levels, and capital planning prioritization using business cases and life cycle costs to select the best project alternatives.

#### Relevant Work Experience:

##### **Large Diameter Pipeline Assessment and Replacement Program / JEA, Jacksonville, FL**

Program manager to manage all aspects of over 900 miles of large diameter water, gravity, and force main pipelines for risk assessment, capital program development, conceptual design, and management of final design and construction over a 5-year period. The risk assessment includes GIS analysis of existing data and field condition assessment services including CCTV, sonar, Smartball acoustic gas pocket analysis, Echologics e-Puse acoustic pipe wall thickness testing, Hydromax p-CAT pressure wave pipe wall thickness testing, Broadband Electromagnetic pipe wall thickness testing, in-line Pica Corp EM wall thickness testing and soil corrosivity analysis

##### **Asset Management Framework Design / Miami Dade Water and Sewer Department, Miami, FL**

Technical Lead to conduct a gap analysis of asset management practices across the organization compared to industry standard frameworks such as the Water Environment Research Foundation (WERF) and ISO 55000 Frameworks. The gap analysis included significant staff interviews, data and procedure documents review as well as an in depth look at the IT systems supporting asset management such as GIS and CMMS. Once the gap analysis was completed the team created the "to be processes" and prioritized roadmap over time to meet best practices within the next 5 to 7 years. SOP's for key asset management practices were also outlined for future implementation. Phase II of the project is anticipated to close the high priority gaps.

##### **City of Sugar Land, Water Main Replacement Planning, Sugar Land, TX**

Technical Lead to create a risk based replacement plan for approximately 500 miles of water mains and 330 lift stations serving the City of Sugar Land residents. The project included the establishment of service levels to define pipe end of life, an evaluation of past failure history to determine the likelihood of failure by pipe cohorts, as well as an analysis of the social, environmental and financial impacts of pipe failure to assign the consequence of failure. For lift stations, a visual assessment is in process to identify the current condition scores to support a risk based approach. A tool built in ESRI GIS the Arcadis renewal and replacement planning system, RRPS, was used to complete the short and long term needs analysis and training and transfer was provided to City staff for future updates.

**BEST TEAM | EXPERIENCED PROJECT MANAGER | PROVEN**

**Toho Water Authority: Asset Management Implementation, Kissimmee, FL**

Program manager for asset management program implementation work for Toho Water Authority's overall asset management program including INFOR EAM software with an ESRI GIS interface. Tasks included establishing asset hierarchy and definitions, performance measures, performing inventory, condition and risk assessments of 15 treatment plant and 300 lift station assets, creating procedures for prioritizing capital projects through business cases, creating procedures for analyzing asset criticality and consequence of failure and modifications to INFOR EAM to produce capital planning reports. This program was implemented over a four year period. Asset Hound was used to speed up the data collection process for the lift station condition assessments.

**New York City DEP BEDC: Prioritization and Risk Assessment of Assets, New York, NY**

Task leader for the condition and risk assessment of assets covering water, wastewater, stormwater, and all facilities owned and operated by NYCDEP including over 50,000 treatment plant and lift station equipment assets and 200,000 pipe assets. The outcome of the Phase I and II project data collection and evaluation was used to create a prioritized 4- and 10-year capital plan for renewal and replacement of assets through the use of business cases. Guidelines documents, tools and staff training will allow DEP staff to make this an ongoing program. Tools included a custom asset management information system that stored all risk data, and created business cases. Phase III is currently starting and will update the CIP through new risk assessment and business cases for treatment plant and pumping assets.

**Lee County: Asset Management Plan, Fort Myers, FL**

Program manager to implement a comprehensive asset management program for the county, including an organizational assessment, software evaluation, implementation of Lucity CMMS, pipeline, multiple treatment plants, and over 500 lift stations inventory condition and risk assessments, and multiple workshops to formulate an overall asset management policy and strategies. Guidelines documents, SOP's, short and long term R&R needs, service levels and KPI reporting have also been completed as part of this four phase project which was conducted over a three year period. Asset hound, AMIS and GIS RRPS tools were used to facilitate the risk analysis.

**Sewer System Facilities Plan Update / DC Water, Washington, DC**

Technical advisor for the completion of the 2013 sewer facilities plan that provides recommendations for projects that need to be completed in the next 20 years for pumping stations, outfall structures, interceptors, force mains and the gravity sewer system. The plan will be risk based adopting best practice asset management standards and includes advanced statistical analysis of the gravity sewer system CCTV condition data to predict future conditions and funding needs.

**AC Water Main Replacement Plan / San Diego, CA**

Lead Technical Support to create a risk based replacement plan for 2,100 miles of Asbestos Cement water mains serving the City of San Diego residents. The project includes the Linear Extended Yule Process to forecast future pipe failures based on past break history and non- invasive acoustical wall thickness field condition assessments. A tool built in ESRI GIS the Arcadis renewal and

## Nichole Lynch-Cruz

### Comprehensive Capital Improvement Plan



Ms. Lynch-Cruz has more than 12 years of experience specializing in project management, document control and scheduling, project delivery, capital planning, regulatory compliance and permitting. Nichole has extensive project management and project delivery experience managing multiple cross-functional project teams in multiple offices and states. Nichole is skilled using a variety of document management and control systems such as Contract Manager, Documentum and ProjectWise, as well as trained in Microsoft Project and Oracle Primavera P6 Project Management Scheduling Software for detailed project cost/schedule monitoring and control. Nichole supports multiple Client projects serving as deputy project manager, activities include cost monitoring in order to deliver projects within budget, resource availability coordination, subconsultant oversight and document controls.

#### Relevant Work Experience:

#### Years Performing Job Title:

- 12 years

#### Education:

- MA Public Administration 2006
- BS Environmental Science 2005

#### Benefit to Broward County

**Nichole has over 12 years of experience as a management consultant, specializing in project delivery, scheduling, regulatory compliance and permitting.**

#### **Broward County FL: Solid Waste and Recycling Study / Fort Lauderdale, FL**

Serves as Deputy Project Manager for the County's ongoing study focused on how to achieve the state mandated 75% recycling goal and developing a path forward for the future governance and infrastructure necessary for long-term solid waste management within Broward County.

#### **Miami-Dade County Water and Sewer Department: Bond Engineering Services / Miami, FL**

Serves as Deputy Project Manager for the following engineering and financial services required by the Department to meet Bond Ordinance requirements and general management policies: Annual Bond Consultant Report, Engineering Consultant Report for Bond Issuances, R&R Project Evaluations, CIP Review, and miscellaneous other studies such as General & Administrative Cost Allocation Review.

#### **Miami-Dade County FL: PortMiami Consulting Engineer's Report and Certificate / Miami, FL**

Served as Project Consultant for the preparation of a Consulting Engineer's Report and Certificate in support of the issuance of the Series 2014 Seaport Revenue Bonds in accordance with Bond Ordinance requirements. Activities included Capital Plan review, management of Client, Vendor and internal data, coordination with Arcadis staff and miscellaneous project management activities.

#### **Puerto Rico Aqueduct and Sewer Authority: Valenciano Dam Design-Build-Finance Procurement / San Juan, PR**

Served as Project Consultant for the procurement of a design-build-finance team for the design and construction of PRASA's \$200-million dam, reservoir and raw water intake pump station project in the Valenciano Region. Activities included development of request for qualifications, development of detailed request for proposals, including finance and agreement terms.



**Solid Waste Authority of Palm Beach County: New WTE Facility / West Palm Beach, FL Solid Waste Authority of Palm Beach County: New 3,000 tpd Waste-to-Energy Facility / West Palm Beach, FL**

Serves as Deputy Project Manager for the planning, permitting, procurement, design review and construction monitoring or the overall implementation of a new 3,000-ton-per-day waste-to-energy facility. Key activities include assistance with the development of a request for qualifications and request for proposals of a design-build-operator. Also assisted with the development of a modification to the Client's site wide Power Plant Siting Permit required under the Power Plant Siting Act as well as assisted with the development of a design criteria package utilized during the procurement process and overall project management activities to support the development of this estimated \$700M capital project. Current activities include utilizing Oracle Primavera P6 Project Management Scheduling Software to analyze Contractor's Construction Schedule for use in discussing potential issues with Contractor staff and ensuring that ARCADIS has the appropriate resources on-site during the correct timeframes, discuss Schedule deviations and project workarounds with Contractor staff to determine the most appropriate project management actions in real time, develop 30, 60 and 90 day lookahead reports broken down by Area, Work Breakdown Structure and Discipline, develop predecessor and successor reports for major activities/milestones, create and utilize custom filters and reports, review permitting milestones and associated predecessors and successors to confirm timing is accurate and discuss findings with the Client, Project Management Team, Staff and Subconsultants. Conduct document control activities through review of drawings/documents issued through the Primavera Contract Manager, disseminate to the Project Team, compile and upload to a SharePoint site and coordinate with Contract staff to determine that we have all necessary information. Also conduct weekly reviews of the project cost through the development of job-to-date billable reports that are issued to the Project management Team, in order to deliver the project with the contractual budget.

**Broward County Solid Waste Disposal District: Needs Assessment Survey / Broward County, FL**

Served as management consultant for the development of a needs assessment survey. The Resource Recovery Board (RRB) wanted to modify the governance and financial structure of its solid waste disposal district and tasked Arcadis with the development of the Survey to assist them in this effort. Assisted in the development of survey questions, that were developed in order to gauge city manager satisfaction with the current solid waste management system, their likes and dislikes, as well as the likelihood that their City would agree to be party to a new ILA after the expiration of the existing ILA in 2013. Utilized an Arcadis software, called Cvent, in order to create the survey electronically, coordinated with various City Managers and their staff to obtain correct email addresses, and issued the survey via email to all 31 of Broward County's cities. Also followed up with various city managers and their proxies to confirm completion of the survey, which results in 25 of the 31 Cities providing responses. Once the survey was closed, conducted various queries of the collected data in order to categorize and summarize the results. Assisted with the development of a summary memorandum and presentation, which provided the findings of the needs assessment survey and was presented to the resource recovery board.

## Freddy Betancourt, PE

### Emergency Response Planning Technical Lead



#### Years Performing Job Title:

- 19 years

#### Professional Registration/ Certification:

- Professional Engineer - FL
- LEED Accredited Professional  
Envision Sustainability Professional

#### Education:

- MS Engineering 2001
- BS Civil Engineering 1999

#### Benefit to Broward County

**As your Emergency Response Planning lead, Freddy brings nearly 20 years of large diameter waste water system experience, most recently part of the core team conducting condition and risk assessment program for over 900 miles of large diameter pipe for the Jacksonville Energy Authority, leading to the development of an ERP that will allow for responding to an emergency event in an effective and well-planned manner.**

Mr. Betancourt has more than 19 years of experience as an engineer focusing on wastewater collection systems buried assessment, rehabilitation, design, and construction oversight. He has worked on various large pipeline programs including the Utility Capital Improvements Projects (UCAP) Program for the City of Tampa. In addition, Mr. Betancourt has participated in the design and construction services of South Florida pipeline projects for the City of Sunrise, including pipe-bursting design. Mr. Betancourt has the experience in large wastewater transmission systems that will lead to the development of a Emergency Response Plan that will account for reacting to and emergency event in an effective and well-planned manner.

#### Relevant Work Experience:

##### Force Main Condition Assessment / Pinellas County, FL

Project Engineer for 20-inch and 30-inch force mains condition assessment for Pinellas County. The project involved condition assessment of parallel force mains, approximately 18,000 LF each, including multiple subaqueous crossings. Assessment included obtaining coupons from the existing force mains, nondestructive testing to determine wall thickness, surge pressure data logging, creating a condensed hydraulic profile and individual valve assessment. The project also included emergency response planning to manage flows during breakdown of old force mains. Conceptual level alternatives showing valve closure sequencing in case of emergency failure were developed to replace, rehabilitate and renew the pipelines.

##### JEA: Large Diameter Pipeline Evaluation and Replacement Program / Jacksonville, FL

Mr. Betancourt is the design engineer for the JEA Large Diameter Pipeline Evaluation and Replacement Program. The Program includes condition and risk assessment of over 900 miles of large diameter water and sewer transmission mains to produce a 5 year Capital Plan and 30 year funding projections. Designs for rehabilitation and replacement projects, construction administration, and special studies are also included under the Program. Current tasks that Mr. Betancourt is working on includes force main condition assessments using broadband electromagnetic testing, designs for pigging stations, specification revisions for air release valves and large diameter force mains, and a force main resiliency program that is evaluating all critical force mains at significant rail, road and water body crossing for operations during emergency situations including bypassing plans and or the construction of additional valves or parallel lines.

##### 12th Street Force Main Condition Assessment and Replacement Design/ City of Tampa, Tampa, FL

Project Engineer for planning, design, public involvement and construction services for the installation of 24,045 feet of 24-, 42- and 48-inch-diameter sanitary force main. The existing pipeline was designed in the late 1970s and was constructed using prestressed concrete cylinder pipe (PCCP) that contained defective class IV

prestressing wire. The first phase of the project included condition assessment of the existing PCCP force main. Mr. Betancourt assisted in the development of a sampling and testing program, coordinating and monitoring sampling and testing program, reviewing the results and preparing a report. Also, the project involved surge protection assessment and installation air release valves assessment. The pipe replacement project also involved a tunnelled crossing of the Hillsborough River, interconnections to existing tributary force mains, and the design of a new discharge structure at the terminus of the 26th Street intercepting sewer.

**Krause Street Force Main Assessment and Replacement Alignment Study/  
City of Tampa, Tampa, FL**

Project Engineer for Krause Force Main Assessment and Replacement Alignment Study for City of Tampa, FL. The project consisted of evaluation of the 60 year old, approximately 11,000 LF of 54-inch diameter Krause Force Main including subaqueous crossings of Garrison Channel and Sparkman Channel. Three segments of the force main were replaced in 1984. Mr. Betancourt assisted in the assessment of the existing pipe condition, analysis of the sub-bottom sonar data, alternative route evaluation and assessing permitting requirements for each of the alternative routes.

**Orient Road Force Main Replacement/ City of Tampa, Tampa, FL**

Project Manager for replacement of 12-inch diameter ductile iron pipe force main with 12-inch diameter PVC/HDPE force main via trenchless construction under 100-foot wide CSX railroad corridor. The City's contractor was unsuccessful to construct the replacement by jacking and boring and had failed twice. Mr. Betancourt prepared emergency response planning and feasibility report for alternative methods of replacing the force main. The project involved recommending to the City of any additional work is required associated with condition assessment and repurposing of the existing pipe, such ultrasonic thickness testing, and soil testing.

**Hillsborough County: Pipeline Rehabilitation Projects (2014 & 2015) /  
Hillsborough County , FL**

Project Engineer for the Pipeline Rehabilitation 2014 and 2015 projects, Pre-bid and Construction Phase Services CIP No. 10750 for Hillsborough County, FL. The County required the services of a qualified consulting engineer knowledgeable in sanitary sewer rehabilitation to provide technical specification review during the pre-bid phase and to provide construction services. The project included technical specification review and editing, attending the pre-bid meeting, responding to bidders questions, evaluating responsible bidders, and providing full construction services including, shop drawing, construction administration, and inspection for over 200,000 LF of sanitary sewers and additional storm sewers in the northwest area of the County. Mr. Betancourt participated in all tasks for these \$7-million dollar projects.

## Daniel Stepner, PE

### Planning / Water and Wastewater Treatment Plants



#### Years Performing Job Title:

- 10 years

#### Professional Registration/ Certification:

- Professional Engineer - FL, NY
- Certified Construction Documents Technologist (CDT)

#### Education:

- MEng Engineering Management 2006
- BSE Civil and Environmental Engineering 2005

#### Benefit to Broward County

Located in close proximity to the County, Dan brings a decade of wastewater collection and treatment experience combined with a focus on condition assessment and long term capital planning.

Mr. Stepner specializes in civil and environmental engineering disciplines, and construction oversight. He possesses experience working with municipalities on water, wastewater, solid waste management programs, including: operations monitoring and inspections, regulatory review, economic analyses, contract interpretation, preparation of procurement documents, proposal review, compilation of data and trend analyses of waste-to-energy facilities, and construction monitoring. He assists in evaluation of and assessed the efficiency of various types of energy programs including cogeneration from digester gas at wastewater treatment plants and waste-to-energy for solid waste.

#### Relevant Work Experience:

##### **Special Consulting Services / Sanitary Sewer Collection System / Bergen County Utilities Authority, NJ**

Performing ongoing inspection of the sanitary sewer collection system to identify sources of inflow and infiltration into the system. Tasks include flow isolation, manhole inspection, dye testing, and video inspection of sewers.

##### **Mount Ebo Corporate Center: Wastewater Treatment Plant O&M Manual, NY**

Developed Operations & Maintenance O&M Manual for a 160,000 gpd wastewater treatment plant. Responsibilities included coordination with plant staff and writing of the O&M Manual. Plant includes screening, primary clarification, rotating biological contactors, secondary clarification, sand filtration, microfiltration, UV disinfection, and solids handling. The wastewater treatment plant serving the Mount Ebo Corporate Center discharges within the watershed of the New York City water supply system and must be upgraded to produce a higher-quality effluent. The project scope includes construction of a new treatment building, a chemical feed system, a new influent flow distribution/chemical mixing system, primary and backup ultraviolet disinfection systems, and membrane (micro) filtration, as well as process, electrical, and instrumentation/control modifications to accommodate the upgrade components.

##### **Town of Southeast: Brewster Heights Wastewater Treatment Plant Upgrade / Southeast, NY**

Developed Operations & Maintenance O&M Manual for a 150,000 gpd wastewater treatment plant. Responsibilities included coordination with plant staff, site visits, and writing of the O&M Manual. Plant includes screening, extended aeration, clarification, sand filtration, microfiltration, UV disinfection, aerobic digestion, and sludge drying beds.

##### **Yonkers Illicit Discharge Elimination Program / New York State Office of General Services / NY**

Performed water sampling of storm water outfalls and manholes to identify points of illicit discharge of sanitary sewage. Responsibilities included collecting water samples from each of the outfalls and manholes, inspecting each outfall and manhole for indicators of sanitary sewage e.g. odors, debris. Once signs of sanitary sewage were identified in the storm water outfalls, the sanitary sewage is tracked through storm water drainage system via sampling, CCTV, and dye testing until the illicit discharges are identified in individual residences and repairs to the drainage system are made.

**Wards Island Wastewater Treatment Plant / New York City DEP, NY**

Assisted in the development of the Wards Island WPCP Staffing Assessment Report. Responsibilities included creating an equipment list for the entire plant, assigning preventative maintenance PM hours to each piece of equipment, determining staffing levels for PM based on total PM hours, and writing the Report.

**Online Operations & Maintenance Manual / Bergen County Utilities Authority, NJ**

Assisted in the development of BCUAs online Information Access System IAS comprised of an online O&M Manual and Document Library. Developed O&M Manual for Service Air, Potable Water, and Sludge Storage Systems. Formatted and uploaded O&M Manuals and other project document to the IAS. Developed sections of the IAS Basic User Training Manual.

**Newtown Creek Wastewater Treatment Plant Upgrade / New York City DEP, NY**

Assisted in the development of Newtown Creek Water Pollution Control Plant WPCP online Information Access System IAS. Converted 18 O&M Manual sections for the Newtown Creek WPCP into a format for upload to the IAS. Uploaded O&M sections to IAS and tested for correct function, aesthetics, and ease of future client use for navigation, uploading, and editing.

**Air Permitting for Owl's Head Water Pollution Control Plant / New York City DEP, NY**

Performed Odor Sampling of Owls Head Water Pollution Control Plant. Includes liquid and air sampling from the surface of primary settling tanks, aeration tanks, final settling tanks, and other select locations at the plant.

**Tallman Island Water Pollution Control Plant Odor Sampling / New York City DEP, NY**

Performed Odor Sampling of Tallman Island Water Pollution Control Plant. Includes liquid and air sampling from the surface of primary settling tanks, aeration tanks, final settling tanks, RAS wet well, and other select locations at the plant.

**New Wastewater Treatment Plant Design / Amgen, Inc., Newbury Park, CA**

Assisted in making revisions to P&ID Computer Aided Design CAD drawings.



# JOSE A. COMPRES P.E.

## EXPERIENCE SUMMARY

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### More than twenty years of experience including:

- Project Management for construction and design projects.
- Structural designer, Forensic engineering services, and Fall Protection.

As a project manager, the responsibilities included: planning and coordinating project activities with the contractors and stakeholders involved, along with scheduling and other project control activities.

For construction projects, the responsibilities included: pre-qualifying contractors, bid and award, quality control of construction processes, RFI's review, addressing any change orders and tracking and monitoring construction costs.

For structural projects, our experience includes code and specifications compliance review, threshold inspection for the designed structures, Water treatment plant design, wastewater pump stations, Stormwater pump stations, Water control structures, and Fall Protection Structural design solutions.

As a professional engineer, he also worked closely to develop biddable plans for both civil and architectural projects.

## RELEVANT EXPERIENCE

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### Institutional projects:

#### **Miami-Dade County Waste Water Master Plan, Miami-Dade County Water & Sewer Department (MDWASD), Florida**

Mr. Compres provided Remedial Action Plans (Design upgrades) for 425 deficient pump stations and 40 force mains and that will be required to be upgraded after a dynamic collection and transmission system modeling used to determine the time-variable operation of over 1,000 pump stations and 150,000 sections of pipe in the Miami Dade County wastewater system during some 20 years planning timeframe.

The project included collecting information for all pump stations and treatment plants, including, running time, pressures, flows and other SCADA database information, Peak flow analysis for each station, infiltration studies, determination of per capita flow projections and population growth using state-of-the-art GIS software, development of a transmission and collection system, among other information needed for the initial model calibration. The project also included capital improvement plan, evaluation of the existing wastewater treatment system with respect to current regulations, determination of future regulatory requirements and treatment needs including the incorporation of a recently issued Reuse Feasibility Study and compliance with anticipated nutrient removal limits and development of a wastewater treatment and reuse implementation capital improvement plan.

#### **Compartment 'C' Build Out G-508 Station, South Florida Water Management District (SFWM), Hendry County, Florida.**

South Florida Water Management District, Storm Water Treatment Area (STA) on Compartment C aim to assist the existing STA's in improving the quality of water entering the Everglades Protection Area. This project enables the District to achieve Everglades water quality standards as part of the implementation of the long-term plan to ensure that all waters discharging into the Everglades protected area are in compliance with State water quality standards.

## EDUCATION

- MBA Pontificia Universidad Católica Madre Y Maestra, 2001.
- BS Civil Engineering Pontificia Universidad Católica Madre Y Maestra, 1994.

## PROFESSIONAL REGISTRATIONS

- Professional Engineer New York P.E. # 095510
- Professional Engineer Florida P.E. # 65557
- Professional Engineer Dom. Rep. P.E. #13794

## PROFESSIONAL AFFILIATIONS

- Florida Engineering Society, (FES) Miami Chapter.

## FIELD OF SPECIALIZATION

- Soil, Asphalt, & Concrete Testing
- QA/QC Inspections
- Fall protection and Construction Safety Procedure Design and Analysis.
- Structural Engineering Design
- Threshold Inspections
- Construction Management
- Cost Estimating
- Civil Engineering Design

## YEARS OF EXPERIENCE

24 Years

## JOSE A. COMPRES P.E.

We were involved in the process through the quantity take-off, pricing, bidding and final submittal and were responsible for: scheduling, monitoring and supervising the material testing of the project.

### **Structural and Civil Plans Review Committee, SFWMD, West Palm Beach, Florida.**

As a member of the consultant team, the responsibilities included a structural and civil review of the project's plans, specs and Engineering Design Report for all the projects to be developed by SFWMD. Among them, the Storm Treatment Areas Compartment C Build-out, the B509B Compartment B build-out and the Hurricane Hardening of Structure S352D project among others.

### **Structural Designer, Midway Pump Station, City of Miami.**

Structural calculations, design, and drafting were required for the construction of this pump station. This pump station will serve to protect from flooding a 43-acre basin found between NW 87th AV, SR-826, SR-836 and NW 7th St in the city of Miami.

### **Pump Station 301, 414, 415, 416, 417 & 449 Improvements**

On March 30, 2015 the building and ancillary structures of Pump Stations were inspected to assess the existing conditions, to verify their adequacy and provide all the recommendations for their improvements. The preparation of BODR includes a description, field observations, professional opinion and all necessary upgrades for the exterior and interior of the building, and all ancillary structures related to pump station.

### **Structural designer for North District Wastewater Treatment rehabilitation Project, Miami Dade Water and Sewer Department, E06-WASD-13.**

The NDWWTP rehabilitation project is part of the 2013 Consent Decree between Miami Dade Water and Sewer Department and Environmental Protection Agency to initiate a program to implement improvements at the plant to restore the viability of this wastewater treatment facility over the long-term. The project includes a different task order for different buildings:

1. Pretreatment/Sludge Transfer Building upgrades

Our scope of services for this project included the preparation of structural plans for the emergency exit including metal catwalk and stairs, new openings, retaining wall design and existing building internal upgrades.

2. Aerated Grit/Screening Building upgrades

The scope of services for this project included the structural plans and calculations for the existing skylight removal and new cover design. The project also included the structural design of a concrete energy dissipation box and the reinforcement of existing elements.

3. New Electrical Building

Our service consisted in the preparation of a complete set of plans for the structural design of a new building to house new switches, existing generators and electrical equipment as part of the NDWWTP Electrical Updates.

4. Primary & Secondary Clarifiers Upgrade

Our service consisted of visually inspecting to evaluate the existing conditions of the primary and secondary clarifiers tanks and verify their suitability for the proposed improvements. The preparation of BODR includes a description, field observations and comments for the exterior and interior of the building, and proposal of the structural repairs and necessary improvements, including the design specifications thereof.

5. Deep Injection Well Pump Station Upgrade

The scope of services for this project included the structural design of the anchor for concrete platforms for heavy equipment on the first and second floors of the building.



# SAMAEL ESTEVEZ P.E.

## EXPERIENCE SUMMARY

### Experience including overall:

- Structural design services.
- Project Management for construction and design projects

For Structural projects his experience includes: Management of the design and production of structural components for several building types in compliance with prevailing codes and specifications. Experience in traffic operation, roadway and structural design, permitting and construction inspections. Familiarized with multiple codes such as AASHTO, Highway Capacity Manual, FDOT Design Standards, Plans Preparation Manual, ACI, AISC, FBC and others.

As project manager his responsibilities included: planning and coordination of projects with contractors and scheduling and project control activities. Collaboration with the construction contractors to ensure both safety of the facility and timely, economic completion, according to public and corporal safety regulations.

## RELEVANT EXPERIENCE

**1. Alexander All Suite Oceanfront Resort** (230 condos of approx. 730 - 1630 sq. ft.) 5225 Collins Ave, Miami Beach, FL 33140.

In this 17-story building our work is attributed to: 31,072.50 SQ. FT. of balconies and parapets repairs; also, concrete columns and damaged stucco repair on all perimeters of concrete beams, eyebrows, and window openings.

**2. Meyer Residence**

6001 SW 70Ave. Miami, FL 33143.

A 2-story residential building with a total construction area of 6,000 square feet. Structure framing consisted of auger-cast concrete piles and grade beams foundations, concrete slabs, and concrete column frame with masonry wall panels.

**3. Bittan Residence**

610 S. Shore Dr. Miami Beach, FL 33141

Our work consisted in the structural and civil design of a 2-story residence. Also, our team provided the structure framing of concrete beams, concrete columns, steel beams, steel columns, concrete shear walls, masonry walls and grade beam foundation of 8,700 Square feet.

**4. Shoe Storage**

668 NW 27th St Miami, FL 33127

The scope of work consisted in prepare a complete set of plans of the structural and civil design for 3 stories building, including storm water drainage improvements plan.

**5. 1712 SW 10th St Miami, FL 33135**

## EDUCATION

- BS Civil Engineering  
Pontificia Universidad  
Católica Madre Y Maestra,  
2004.

## PROFESSIONAL REGISTRATIONS

Professional Engineer  
Florida P.E. # 84368

## FIELD OF SPECIALIZATION

- Structural Engineering Design
- Threshold Inspections
- Construction Management
- Cost Estimating
- Civil Engineering Design
- Fall protection and Construction Safety Procedure Design and Analysis.

## SOFTWARE

- Microstation
- AutoCAD
- MathCAD
- eTabs
- STAAD pro
- SAP2000
- Word
- Acrobat
- Illustrator
- Excel
- Powerpoint

## YEARS OF EXPERIENCE

6 Years



## SAMAEL ESTEVEZ P.E.

Provide a complete set of structural drawings and calculations for a 2-story building, our work included the repair of damaged wood walls and joists, concrete lintel, design of new wood terrace and rear building renovations.

### **6. SR-94 Kendall Drive West of 162nd St Florida Department of Transportation D6.**

Managed design of roadway improvements required for the development of the west Kendall Dr. area.

- Coordinated all the plans reviews and approvals with all the different FDOT specialties like traffic operations, roadway design, maintenance of traffic, drainage, structures, access management, right-of-way and landscaping
- Construction coordination with all other FDOT operations.

### **7. US-1/SR-5 Biscayne Blvd. intersection with SR- 860 Miami Gardens Dr. Florida Department of Transportation D6.**

This is a major dense urban intersection that was modified to accommodate the added traffic from major developments on the east side, effectively adding a leg to the intersection.

- All aspects of the intersection design were re-engineered including geometric design, traffic signal phases, signs and pavement markings.
- Intersection have the particularity of having a railroad intersecting one of the legs so additional coordination and considerations had to be made with the pertaining railroad authorities.

### **8. SR-989 SW 112th Av Reconstruction Florida Department of Transportation D6.**

Area developers were required to widen and reconstruct the road to accommodate the added traffic. Managed and coordinated all the design and construction inspections efforts between all the FDOT specialties and the developer's consultants and contractors.

- Coordinated all the plans reviews and approvals with all the different FDOT specialties like traffic operations, roadway design, maintenance of traffic, drainage, structures, access management, right-of-way and landscaping.

### **9. SR-826 VMS Overhead Signs Miami Dade Expressway Authority**

Structural Designer of variable message overhead signs at the SR826

- Wind and gravity loads analysis.
- Steel upright and cantilever truss.
- Drilled shaft foundation.

### **10. SR-836 Signature Overhead Signs Miami Dade Expressway Authority**

Structural Designer of MDX signature overhead signs for the SR836 extension to NW 137th Avenue.

- Wind and gravity loads analysis.
- Post-tensioned specially-shaped concrete upright design.
- Steel round tube beam design.

## Douglas K. Hammann, P.E.



### Years of Experience

29

### Education

ME, Environmental and  
Water Resources  
Engineering, Florida  
Atlantic University

BSCET, Civil  
Engineering, Southern  
Illinois University

AS, Architectural  
Technology, Rend Lake  
College

### Professional Registrations

Professional Engineer  
Florida, 1996  
Ohio - 2006

### Affiliations

ASCE Broward Branch  
Past President  
AWWA  
FWEA  
WEF

### Publications

WEF Committee to  
update EPA Manual  
[Alternative Wastewater  
Collection Systems  
\(EPA/625/1-91/024\)](#)

[Evaluation of a Magnetic  
Ion Exchange Resin to  
meet DBP Regs at the  
Village of Palm Springs,](#)  
Journal AWWA,  
February 2004, Volume  
96, Number 2

### Summary

Principal Engineer with 29 years of experience in the planning, design, permitting and construction administration of water, wastewater and reclaimed water projects for various municipal and private clients. These projects have included master planning, design, permitting and construction monitoring of water distribution systems, sanitary sewer collection and transmission systems, additions/rehabilitation of water treatment plants, and reclaimed water treatment and distribution systems.

### Project Experience

#### *Experience*

#### **Master Plans**

Utility system master plans for water, wastewater, and reclaimed water facilities for the Cities of Coral Springs (2), Pompano Beach (2), Hillsboro Beach and Palm Springs (2), Florida.

#### **Three Water Booster Stations, City of Coral Springs**

Eckler Engineering, Inc. rehabilitated three (3) potable water boosters stations within the City of Coral Springs. The aging booster stations required new mechanical, electrical and instrumentation equipment along with miscellaneous civil site plan improvements. Each of the stations help sustain the design pressure within the distribution system.

#### **Cudjoe Regional Wastewater Transmission System for the Outer Islands**

This Design/Build project will convey wastewater from neighborhood lift stations located on Lower Sugarloaf Key, Ramrod Key, Little Torch Key and Big Pine Key to the Cudjoe Key Regional Wastewater Treatment Plant. The transmission system will consist of over nine miles of buried, slip-lined and horizontal directional drilled pipe. The system will also include eight bridge crossings and three, 10 foot diameter wet well master pump stations with biological odor control.

#### **Sanitary Lift Stations**

Preliminary design reports, design, permitting and construction services for the rehabilitation of 250+ existing sanitary lift stations for the Cities of Coral Springs, Palm Springs, Delray Beach, Hypoluxo, Sunrise, and Pompano Beach, Florida.

#### **Rehabilitation of Master Pump Station**

Design, permitting and construction phase for the Rehabilitation of Master Pump Station Number 21 for the City of Pompano Beach, Florida. Triplex wet pit/dry pit operation with an average daily influent flow of 3,600 GPM (5.0 MGD).

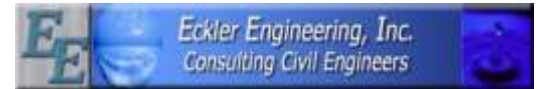
#### **Islamorada Wastewater Collection and Transmission**

This Design/Build/Operate project will convert the Village of Islamorada's current wastewater collection system from septic tank treatment to vacuum sewer and low pressure systems. E/One grinder pumps and vacuum pump stations will serve over 2,000 equivalent dwelling units on Plantation Key and Lower Matecumbe Key. This system will convey wastewater from these service areas to the Key Largo Water Treatment District's Regional Treatment Plant.

#### **Wastewater and Stormwater Management System Improvements**

Design/build project completed for the Ponte Vedra, Florida Municipal Service District under contract with JEA. Project consisted of 45,000 feet of vacuum main, 350 vacuum service pits, a vacuum pump station, and biological odor control for a high heat direct air system.

Douglas K. Hammann, P.E.



## Project Experience cont'd

### **PSEN-13-03 Odor Control at the Wastewater Treatment Plant, City of Pembroke Pines**

This was a design-build project that provided engineering services to improve parts of the existing wastewater facility. Eckler Engineering, Inc. was responsible for the structural, electrical, instrumentation and civil design associated with the incorporation of odor control and headworks building improvements. The scope of improvements for the odor control included a new two stage wet chemical scrubber system and new odor control misters. Improvements to the headworks building included removing and replacing bar screens, vortex grit separators, shaftless grit classifiers and wash presses. The scope of services also included analyzing hydraulic issues within the headworks building in terms of flow measurements through the system's parshall flumes.

### **Aerobic Sludge Digester**

Design, permitting and construction phases for a new primary sludge digester for South Broward Utility's existing wastewater treatment plant.

### **Mariposa Development WWTP**

Project consisted of the preliminary design of a 3.0 MGD facility for the Mariposa Development in Putnam County. The facility included a low lift pump station, aerated equalization basin, headworks, membrane bioreactors, disinfection basin, IQ water pump station, aerobic digester, waste sludge pump station, blower/chemical building and odor control. Final design and construction not completed.

### **Effluent Reuse Facility**

A 2.5 MGD effluent reuse facility for the City of Pompano Beach, Florida. This project included filters, disinfection, pumping and a 2 MG ground storage tank which won the 1989 Portland Cement Association Award of Excellence for "Distinguished Architectural Treatment of Prestressed Concrete Tank Construction".

### **Reclaimed Water Production Facility Expansion**

Expansion of existing 7.5 MGD facility to 17.5 MGD for the City of Boca Raton. The project was inclusive of new tertiary filtration, new NaOCl and coagulant storage/feed systems, contact basin modifications, new reclaimed water transfer pumps and demolition of existing facilities.

### **Influent Screening Modifications, City of Pompano Beach Reuse Water Treatment Plant**

Removal and replacement of existing step screen(s) with new 3 mm perforated plate screen(s), new screenings washing compactor, modifications to existing channels to facilitate screen system revisions, new control systems and electric for the 7.5 MGD facility.

### **Reclaimed Water Treatment Facility Expansion, City of Pompano Beach**

Expansion of existing 2.5 MGD facility to 7.5 MGD. The project was inclusive of new tertiary filters, new low head residential pump station, new chemical building, new 4.0 mg storage tank and support system improvements.

### **Service Area 5 WWTP MBR Upgrade, Marathon, FL**

Removal and replacement of the submerged membrane units from three existing membrane bioreactor basins. Project included engineering services to complete a minor revision to the facility operation permit. Project completed using design/build delivery method.

### **MBR System and RO System Improvements, North Key Largo Utility Corporation**

Removal and replacement of the submerged membrane units from existing membrane bioreactors 1 and 2. Consolidation of submerged membranes and repurposing existing membrane bioreactors 3 and 4 to function as peak flow treatment capacity or digester/thickening during average flow conditions. Overall capacity of the existing reverse osmosis (RO) irrigation water production facility was expanded from 1.274 MGD to 2.039 MGD. Six additional RO pressure vessels and isobaric energy recovery units were added to each RO train. This allowed the capacity increase of 60% with an overall pumping horsepower reduction of 6%. Project included engineering services to complete a major WWTP permit modification and modify the capacity of two Class V injection wells.

## Mario A. Gamboa, PE

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### ▪ **Education**

*BS Electrical Engineering,  
Florida International  
University, 1981*

*Engineering Management  
Graduate Level Studies,  
Florida International  
University, 2004.*

### ▪ **Licenses**

*Electrical Engineer,  
Florida*

*Electrical Engineer,  
California*

*Electrical Contractor,  
California*

*Master Electrician, Various  
Counties in Florida*

### ▪ **Professional**

#### **Affiliations**

*Institute of Electrical and  
Electronics Engineers*

Mr. Gamboa's professional experience spans 33 years in design; value engineering; engineering management, construction management of numerous municipal, industrial and commercial projects. These include expertise focus with electric energy and automation for water treatment, wastewater treatment and pumping stations. Provided electrical design and instrumentation with construction specifications for 115 kV substations, medium voltage class (5-kV through 38-kV) and low-voltage power distribution systems; including prime and standby power generations systems, power for large pumps-motors with 5 kV variable speed controls systems; lighting systems; life safety systems; grounding; lightning protection; and SCADA automation systems.

Engineering Management duties included Client Oriented Services, leadership and mentoring of engineering and support staff, project and quality control management, achievement of Team Goals.

Representative assignments include:

#### ▪ **Wastewater Projects**

- Electrical engineer for the Central County Water Reclamation Facility Phase 2 Expansion and Main Lift Station Upgrade, Sarasota County Utilities Department, Florida. Project included design of an upgrade to the 480 volts power distribution and SCADA system that included FP&L utility transformers, 480 volts-4000 A switchgear with provisions to synchronize two generators; motor control centers, underground ductbanks, pumps

with variable frequency (speed) controllers, and new programmable controllers. Mr. Gamboa provided design and construction support services.

- Electrical engineer for the City of Plantation Regional Wastewater Plant and Central Water Plant Pump Speed Controller Upgrade project, City of Plantation Utilities Department, Florida. Design included new 480 volts MCCs, VFDs, underground ductbanks, electric manholes, new programmable automation controllers, and temporary power provisions to maintain the existing plant in continuous operation. Wastewater processes included modifications to the existing deep well pumps, RAS pumps, and water storage transfer pumps.

#### ▪ **Water Projects**

- Electrical engineer for the City of Pompano Beach Water Treatment Lime Softening Plant, Electrical Improvements Master Plan project. This project included separate phases for the design and construction to replace 5 kV power distribution switchgear, synchronizing switchgear and controls of two 900 kW – 5 kV standby power generators, 5 kV motor control centers, 600 volts switchgear, 5 kV /480 volts transformers, supervision for design of 600 hp pump's speed controls with 5 kV VFDs and addition of programmable logic controllers.
- Electrical engineer for the City of Pompano Beach Water Treatment Lime Softening Plant, Phase I Electrical Improvements project, including 5 kV motor control centers with redundant power provisions for 5 kV 600 HP VFDs for high service pumps.
- Electrical engineer for the City of Plantation East Water Treatment Plant, SCADA Upgrade and speed control of high service pumps project, City of Plantation Utilities Department, Florida. Project included VFDs for pump control and replacement of two programmable logic controllers. Mr. Gamboa assisted with the coordination for the replacement of PLC hardware and software for the control of existing RO membranes and water pumping equipment.
- Electrical engineer for Sarasota County Venice Gardens Water Treatment Plant Upgrades Pre-Design project. Task included pre-design evaluation of electrical 480 volts power distribution system capacity, standby generator

## Mario A. Gamboa, PE

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capacity and PLC configuration for improvements to the existing water treatment membranes.

### ▪ **Infrastructure Water Projects**

- Electrical /Instrumentation engineer for the Tampa Bay Water, Florida Cross Ranch Wellfield Pumps (and Motor Control Center) Replacement Project in seventeen (17) well sites.
- Engineer for Electrical Assessment of three (3) Water Reuse Pumping Stations, Manatee County Water Utilities. Project included Power System Analysis of utility power, motor control center, 200 HP VFDs and standby power generator, for compliance with NFPA-72E for installing equipment arc flash labels.
- Electrical Engineer for Odessa and US 41 Booster Pumping Stations – Pressure Modifications Projects, Tampa Bay Water. Project includes Analysis of utility power, switchboard, 250 HP VFDs, 75 HP VFDs and standby power generator, to comply with NFPA-72E and electrical system modifications.
- Lead Electrical Engineer for Lift Station No. 1 Rehabilitation Project, City of Saint Petersburg, Florida. Provided design services for construction of wet well with three pumps, variable speed controls, standby power generator and remote telemetry controls
- Lead electrical engineer for the Peace River Manasota Regional Water Supply Authority Regional Integrated Loop System- Phase 3A Interconnect project. Provided electrical design and bid-phase services for construction of a high service pumping station; and a 5 MG water storage tank.

### ▪ **Energy Conservation**

- Electrical engineer for the City of Chico, California Solar Power Generation System at the Water Pollution Control Plant Provided design services for electrical interconnection of the solar panels to the plant power distribution equipment, and provided coordination services to meet the requirements for the solar power system interconnection with Pacific Gas & Electric (PG&E) power grid. The solar electric system is a ground mounted photovoltaic tracking system, increasing efficiency by up to 25% by following the track of the sun from early morning to late afternoon. The system uses high efficiency photovoltaic modules to generate maximum output per square foot. The solar electric system included 5,824 solar electric tiles in a 5 acre area, with a system capacity of 1,100 kW. The DC output from the photovoltaic modules is converted to (AC) electricity by inverters, and the AC power is synchronized with the utility power grid.
- Performed design review of the Fuel Cell Cogeneration project at the Moreno Valley Regional Water Reclamation Facility, Eastern Municipal Water District, California. Project included design of 1.5 MW fuel cell cogeneration system.

- Lead electrical engineer for design of co-generator controls to synchronize two methane gas cogeneration units with six standby diesel generator units. This work included retrofit of existing 480-volt generators to synchronize 3 MW of on-site generators with the utility 12-kV service at Union Sanitary District, Alvarado Wastewater Treatment Facility, Union City, California.

### ▪ **Expertise with Power Topics**

- Load Flow Studies
- Short Circuit and Protective Device Coordination Studies
- Arc Flash Studies
- Energy Management

### ▪ **Expertise with Building Codes**

- Florida Building Code
- International Building Code
- Key NFPA Guidelines and Standards
  - NFPA - 1 Fire Code
  - NFPA-70 National Electrical Code
  - NFPA-70-E Standards for Electrical Safety in the Workplace
  - NFPA-101 Life Safety Code
  - NFPA-110 Standards for Emergency and Standby Power Systems
  - NFPA-820 Fire Protection in Wastewater Treatment and Collection Facilities.
- NEMA Standards; ANSI Standards; UL standards
- IEEE Standards; ISA Standards



**Panneer Shanmugam, PE**  
**RADISE International, L.C.**  
**Broward/Miami-Dade Office Manager**  
**CEI Business Unit Lead**

**Professional Registration and  
Certifications:**

- Professional Engineer, Florida, #00057006
- URS Project Management Certification (PMI based)

**Education:**

- MBA, Finance, Florida Atlantic University
- ME, Civil Engineering, Florida Atlantic University
- BE, Civil Engineering, National University of Singapore

**Professional Affiliations:**

- American Society of Civil Engineers (ASCE), Fellowship

**Capabilities and Expertise:**

- Staff Management
- Construction Management Services
- Project/Program Management
- Financial and Budget analysis
- Regulatory and Grants Management
- Planning and Zoning Analysis
- Utilities and Facilities
- Telecommunications and Power
- Water and Wastewater
- Water Resources
- Oil and Gas
- Industrial Facilities
- Mass Transit

Mr. Shanmugam, PE, has 24 years of experience including Project/Program Management. His areas of expertise include construction management services, financial and budget analysis, regulatory and grants management, planning and zoning analysis, utilities and facilities, telecommunications and power, water and wastewater, water resources, oil and gas, industrial facilities and mass transit. He has managed and led teams providing engineering, environmental and construction services.

His skills include engineering/construction finance and analysis of financial metrics. He has a thorough understanding for general accounting standards and contract approval matrices and processes, and has successfully leveraged and built coalitions across multi-disciplinary resources to develop highly effective execution teams that achieved operational and program goals.

Mr. Shanmugam has a strong fundamental understanding of state, national and global economic policies; excellent local and international industry knowledge; regulatory impacts, specifically energy and environmental; and engineering/construction industry and technology trending.

**REPRESENTATIVE EXPERIENCE**

**RADISE International, LC, Palm Beach County, FL, 2017 - present**

*CEI Business Unit Lead  
Broward/Miami-Dade Area Manager*

**L&T Technology Services, 2016 – 2017**

*Business Head/Vice President, North America Process Industry*

Managed and led teams providing engineering and technology solutions throughout the development chain across industry segments including the CPG, Chemical and Energy sectors.

**AECOM/URS, 1996 – 2016**

*FL Power Business Unit Leader (AECOM), Vice President, 2014 – 2016  
FL-LA Water Business Line Leader (URS), Vice President, 2011 – 2014  
Engineering Operations Manager (URS), Vice President, 2008 – 2014  
Senior Project Manager (URS), 2003 – 2008  
Project Manager/Engineer (URS), 1996 – 2003*

Managed and led teams providing engineering, environmental and construction solutions for projects throughout the value chain across a broad based market segment including Water Resources, Water and Wastewater, Power and other Industrial market segments.

**Singapore Armed Forces, 1988 – 1991**

*Non-commissioned Officer, Combat Engineering Unit*

Served in the Combat Engineering Unit of the SAF as a non-commissioned officer. Services included leading and training enlisted men in construction of defense facilities in a proposed battle field.



**Panneer Shanmugam, PE**  
**RADISE International, L.C.**  
**CEI Business Unit Lead**  
**Broward/Miami-Dade Area Manager**

## **TECHNICAL EXPERIENCE**

- Helped develop staff and programs in Telecommunication and Power System Facilities; Water and Wastewater Engineering; Water Resources Planning and Engineering; Construction Management Services over the years.
- Oversee project management and technical quality control standards implementation throughout project teams.
- Experiences include planning; design; value engineering; financial and budget analysis; procurement; schedule controls; variance consultation, construction oversight, etc.
- Provide leadership and guidance for large complex projects and solutions.
- Mentored and Led teams in developing contract drawings; documentation, preparation and execution of specifications, bid documents; cost and time estimates.
- Developed and coordinated feasibility studies, engineering reports, rate study and bond issues; and litigation support.
- Setup teams and guided initiatives for construction bidding, operation and management of communication facilities, municipal utilities and infrastructure.
- Provided permitting and regulatory coordination, cultural resources mitigation coordination; land management issues resolution on major projects.

## **KEY PROJECT SPECIFIC EXPERIENCE (1996 – CURRENT)**

### **WATER RESOURCES SECTOR:**

Serving various roles including that of program manager and principal engineer, developed strategies, launched and executed various successful water resources programs. Negotiated and established program contracts. Achieved exceptional performance through clearly established and communicated project specific criteria throughout the program organization. Key projects are presented below:

#### **3,400 Acre Storm Water Treatment Area (STA) Planning and Design, South Florida Water Management District (SFWMD)**

Client Manager for design development of 3,400 Acres of Storm Water Treatment Areas (STA 5/6) as part of the SFWMD Everglades Restoration Program as mandated by the Everglades Forever Act to direct polluted stormwater runoff into STAs for treatment before final discharge to sensitive Everglades Protected Areas. Tasks included Hydrological and Hydraulic Modeling of the 16,000 Acre area and canal/flow-way analysis; evaluation of cultural resources sites and their protection/mitigation; 12-miles of new levee/canal systems; 16 new automated gated culvert structures; 1 new bridge structure; electrical power systems and instrumentation and controls.

#### **3,400 Acre Storm Water Treatment Area (STA) Construction Management, South Florida Water Management District (SFWMD)**

Client Manager for construction management Services to buildout 3,400 Acres of STA with total construction value of \$40M. Project included construction of primary and tertiary treatment cells to treat pollution laden stormwater runoff from largely agricultural lands. Project faced severe deadlines to meet court mandated dates to meet water quality treatment objectives. Project was completed on time and budget received public accolades for meeting broader public environmental objectives.

#### **C139 Watershed Modeling and Analysis, South Florida Water Management District (SFWMD)**

Client Manager for a 175,000 watershed hydrologic and hydraulic study, performed to evaluate alternative stormwater delivery methods into a 16,000 acre stormwater treatment area (STA). Various alternatives were evaluated to select an optimal stormwater delivery system that included new canals and structures, modifications of existing canals and structures, new PS, etc. The study was performed to optimize delivery methods into the treatment areas. Mike 11/Mike SHE hydrological models were used by establishing a baseline model which was calibrated with various selected storm events. The calibrated and validated model was used to simulate existing basin hydrologic and hydraulic conditions for the 5-year, 10-year, 25-year, and SPF storm events. Water surface profiles were computed for the L-1, L-2 and L-3 canal systems to help with the development of STA inflow control structures.

#### **G-600 Pump Station Build, Operation and Maintain, South Florida Water Management District (SFWMD)**

Client Manager for rebuild, operation and maintenance of a 300cfs pump station located at Hendry County. The pump station provided the main inflows into STA 6-1 from the Compartment C watershed till a separate inflow source was created for the STA. Pump Station had to be rebuilt after a fire destroyed major portions of the original structure and systems. This rebuilt pump station then served as a flood control structure for the Compartment C watershed and management of water levels with the watershed allowed dryer conditions



**Tom Mullin, P.E.**  
**RADISE International, L.C.**  
**Vice President**  
**Chief Geotechnical Engineer**

**Professional Registration and  
Certifications:**

- Professional Engineer, #43366 (Florida), 1990

**Education:**

- MS, Civil/Geotechnical Engineering, University of Illinois
- BS, Civil Engineering, University of Illinois

**Capabilities:**

- Water Resources Engineering
- Soils and Foundation Engineering
- Civil and Major Earthworks Engineering Design
- Civil Construction Management
- Geotechnical Instrumentation and Monitoring
- Groundwater Hydrogeology
- Quality Control Testing and Inspection Oversight
- Peer Review

Mr. Mullin has 39 years of geotechnical engineering experience including water resources engineering including ports and harbors, dams and reservoirs. He has served as Chief Geotechnical Engineer on numerous projects for private and public clients including the South Florida Water Management District (SFWMD), United States Army Corps of Engineers (USACE) and Florida Department of Transportation (FDOT).

Mr. Mullin has managed projects involving major high rise towers, commercial buildings, power generating and industrial facilities, as well as transportation and landfill projects in Florida, Puerto Rico and the Caribbean.

He provides quality assurance and quality control; materials testing engineering services including soils, foundations, and geotechnical investigations; vibration monitoring; materials and systems testing; and structural and special assessments testing services.

His skills include foundation design and construction, backfilling, test programs, quality control testing procedures and documentation, installation and evaluation of geotechnical monitoring instrumentation, vibration monitoring and pile load testing. He provides quality assurance oversight; CEI documentation; construction surveillance, inspection and testing; and technical peer review.

**REPRESENTATIVE PROJECTS:**

***Project Manager, Chief Geotechnical Engineer and/or Principal Design Consultant for the following projects:***

**G420 and 422 Pump Station Design and Sediment Probing, Palm Beach County, FL**

Geotechnical Engineering and Testing Services.

**C-43 Reservoir Early Start, Palm Beach County, FL**

Geotechnical Engineering and Testing Services.

**S9 & S9A Trash Rake and Pump Station Refurbishments**

Geotechnical Engineering and Construction Material Testing Services.

**Wastewater Lift Station Rehabilitation, Palm Beach County, FL**

Project consisted of providing geotechnical engineering including field and laboratory testing services.

**Lake Hicpochee Dispersed Water Management Plan, Glades and Hendry Cos, FL**

Geotechnical Engineering Services.

**Eastpointe Pump Station Design, Palm Beach County, FL**

Geotechnical Engineering, Engineering During Construction, Construction Material Testing and QC Services.

**Hillsboro Canal Bank Stabilization, Broward and Palm Beach Counties, FL**

Geotechnical Engineering and Construction Material Testing Services.

**STA-1 West Expansion Area 1, Palm Beach County, FL**

Geotechnical Engineering & Construction Material Testing Services.





**Tom Mullin, P.E.**  
**RADISE International, L.C.**  
**Vice President**  
**Chief Geotechnical Engineer**

**Stormwater Treatment Area 5 Flow Way 3 and STA 6 Section 2, Hendry County, FL**

Geotechnical Engineering for the design development of 4000 Acres of impounded man made wetlands.

**C-44 Reservoir - Discharge Canal, Spillway Structure, Martin County, FL**

Construction Engineering Inspection and Material Testing Services.

**EAA A-1 Flow Equalization Basin (FEB) Construction, Palm Beach County, FL**

Construction Engineering Inspection, QA and Construction Material Testing Services.

**L-40 and L-85 Levees Evaluation, Palm Beach County, FL**

Geotechnical Engineering Services.

**Compartment C, Stormwater Treatment Area, Hendry County, FL**

Geotechnical Engineering for the civil design development of 6,240 acres of impounded manmade wetlands in a large Stormwater Treatment Area Flow Way.

**East Coast Protective Levee Rehabilitation, Palm Beach, Broward and Miami-Dade Cos, FL**

Construction Engineering Inspection, QA and Lab Testing Services.

**L-8 Divide Structure, Palm Beach County, FL**

Geotechnical Engineering and Construction Material Testing Services.

**East Central Regional Water Reclamation Facility (ECRWRF) Biosolids Improvement Project, Palm Beach County, FL**

Geotechnical engineering and field/laboratory testing services as part of an overall design package for the upgrade of the ECRWRF Biosolids Project.

**Herbert Hoover Dike Culverts 11 and 16, Palm Beach and Martin County, FL**

Construction Engineering Inspection and Material Testing Services.

**Herbert Hoover Dike Culverts 5 and 5A, Palm Beach County, FL**

Geotechnical Engineering and Construction Material Testing Services.

**Herbert Hoover Dike Culverts 4A and 3, Palm Beach and Hendry County, FL**

Construction Engineering Inspection and Material Testing Services.

**Southern Transmission Main Crossing of I-95 and the Turnpike, Palm Beach County, FL**

Project consisted of providing Geotechnical Engineering including field and Laboratory Testing Services.

**Dredging and Spoils Containment Facility Design, 1500 Ac. Critical Lake Trafford Dredging Restoration, Collier County, FL**

Geotechnical Engineering for the civil design preparation for 3 phases of the lakes dredging over a 7-year period.

**Peer Design Review, Stormwater Treatment Areas 1W, #5 and #6, Palm Beach County, FL**

Geotechnical peer reviews of geotechnical analyses and levee designs by others for 3 SFWMD Stormwater Treatment Areas.



**Andrew Nixon, PE**  
**RADISE International, L.C.**  
**Operations Manager**

**Professional Registration and  
Certifications:**

- Professional Engineer, Florida, #71458
- OSHA 40-hour Health and Safety / OSHA, 29 CFR 1919.120 (HAZWOPER)
- Qualified Stormwater Management Inspector, Inspector # 27919

**Education:**

- B.S. Ocean Engineering, Florida Atlantic University, Palm Beach County, Florida

**Affiliations:**

- Florida Engineering Society
- National Society of Professional Engineers
- Florida Engineering Leadership Institute Alumni
- American Society of Civil Engineers

**Capabilities:**

- Project Management
- Cost Estimating
- Geotechnical Engineering
- Earthwork Inspection
- Construction Materials Testing
- Quality Control
- Vibration Monitoring
- Design Recommendation & Review
- Foundation System Design
- Environmental Engineering
- Phase I & II Environmental Site Assessments
- Report Preparation
- Site/Contamination Assessment Reports
- Remedial Action Plans
- Tank Closure Assessments

Mr. Nixon has 13+ years of experience including providing Environmental, Geotechnical and Construction Materials Testing Services for low and high-rise structures, single family residential developments, bridges, piers, buried structures, transmission towers, silos, roadways, etc.

He prepares and reviews geotechnical and materials engineering inspection reports, coordinates and supervises engineering staff and drilling personnel, and conducts foundation observations, foundation design reviews and geotechnical instrumentation monitoring.

Mr. Nixon's skills include also completing and supervising pile inspections, helical pier inspections, fireproofing inspections, load tests, and monitoring specialty ground improvement techniques such as vibrocompaction, vibro-replacement and dynamic compaction. He has conducted and supervised several Preconstruction Video Surveys and Vibration Monitoring Programs.

He has provided oversight of field and laboratory testing programs during the construction phase of a variety projects, and supervised other engineers in the Construction Materials Testing Department. The testing programs typically included the performance of earthwork inspections, field and laboratory testing of soils, and field sampling of concrete. Mr. Nixon has also inspected and supervised testing programs during the construction of various roadway projects.

He completed and supervised other engineers who have completed 1,000+ Phase I & II Environmental Site Assessments for a variety of sites including brownfields, HUD, power transmission, dry cleaners, gas stations, nurseries, landfills, ports and other commercial/industrial sites. Additionally, Mr. Nixon has completed 20+ Site/Contamination Assessment Reports and Tank Closure Assessments in accordance with Chapter 62 of the Florida Administrative Code (FAC). He has served as Project Manager for the installation of several remediation systems.

**REPRESENTATIVE EXPERIENCE**

**FDOT Port of Everglades – Broward County Intermodal Center and People Mover System, Broward County, Florida**

Senior Project Engineer – Conducted a Level I Contamination Screening Evaluation Report (CSER) in accordance with FDOT's Project Development and Environmental (PD&E) guidelines. The proposed project consisted of a People Mover and Intermodal Center that provided effective transportation between the airport and seaport. Mr. Nixon provided professional opinions relative to the presence of potential contamination within or near the proposed project alignment alternatives from the Fort Lauderdale Airport to the Port of Everglades.



**Andrew Nixon, PE**  
**RADISE International, L.C.**  
**Operations Manager**

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**City of West Palm Beach Tamarind Avenue Improvements, Palm Beach County, Florida**

Senior Project Engineer – Conducted a Level I CSER in general accordance with FDOT's PD&E guidelines. The proposed project consisted of utility improvements that will include de-watering along the project corridor. Mr. Nixon provided professional opinions relative to the presence of potential contamination from adjacent sources such as gas stations within or near the proposed project alignment.

**City of West Palm Beach 24<sup>th</sup> & 25<sup>th</sup> Street Improvements, Palm Beach County, Florida**

Senior Project Engineer – Conducted a Level I and II CSER in general accordance with FDOT's PD&E guidelines. The proposed project consisted of utility improvements that will include de-watering along the project corridor. Mr. Nixon provided professional opinions relative to the presence of potential contamination from adjacent sources such as gas stations within or near the proposed project alignment. Level II consisted of the advancement of soil borings for the collection of soil samples and the installation of groundwater monitoring wells for the collection of groundwater samples.

**Florida Gas & Oil, Inc., West Palm Beach, Florida**

Senior Project Engineer – Conducted a Low-Scored Site Initiative Site Assessment (LSSI) Report for the Florida Department of Environmental Protection (FDEP) as part of the state administered Abandoned Tank Restoration Program in accordance with Chapter 62-780, FAC. Site was a former gas station with several different tank farms. Site was found to be contaminated and did not meet one of the three LSSI closure endpoints.

**ABC U-Pull-It, West Palm Beach, Florida**

Senior Project Engineer – Conducted environmental assessment and remediation services for an automobile recycling facility. Mr. Nixon designed and installed a Soil Vapor Extraction remediation system as well as supervised the excavation and disposal of lead-contaminated soil. A Site Rehabilitation Completion Order (SRCO) was received from the FDEP.

**Port of Palm Beach, Florida**

Senior Project Engineer – Conducted several environmental assessments for underground storage tanks, environmental assessments for expansion of port facilities, and environmental assessments in support of dredging operations and sea grass assessments. Also conducted semi-annual storm water monitoring sampling satisfying the requirements of the U.S. Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) storm water permit.

**Lainhart & Potter Lumber Yard, Jupiter, Florida**

Senior Project Engineer – Conducted a Tank Closure Assessment Report, Site Assessment Report and Remediation Action Plan, which included the design of a groundwater pump and treat system utilizing a low profile air stripper to treat contaminated groundwater prior to its discharge back in to the aquifer. Mr. Nixon also supervised the installation and startup of the remediation system.

**South Florida Water Management District**

Senior Project Engineer – Provided geotechnical and environmental engineering services for multiple SFWMD projects. Projects include levees, reservoirs, water control structures and water quality projects.

**Ballpark of the Palm Beaches, West Palm Beach, Florida**

Senior Project Engineer – Provided geotechnical and environmental engineering services for the construction of a spring training facility on a former landfill site.

**City of West Palm Beach – Multiple Roadway and Drainage Improvement Projects, West Palm Beach, FL**

Senior Project Engineer – Provided geotechnical and environmental engineering services for various roadway and drainage improvement projects throughout the City.



**Andrew Schechter, PE**  
**RADISE International, L.C.**  
**Engineer**

**Professional Registration and  
Certifications:**

- Professional Engineer (Civil Engineering), Florida 1986
- Professional Engineer (Civil Engineering), New York 1977
- (inactive) Professional Engineer (Civil Engineering), New Jersey 1984
- (inactive) Professional Engineer (Civil Engineering), Pennsylvania 1986
- Certified Project Manager- URS Corporation 2009

**Education:**

- M.S. Civil Engineering, Polytechnic Institute of New York, 1974
- B.S. Civil Engineering, Polytechnic Institute of Brooklyn, 1972

**Capabilities:**

- Civil, Geotechnical and Environmental Engineering
- Project Management
- Expert testimony
- Business Development

Mr. Schechter is a Florida Professional Engineer with over 40 years of experience, specializing on Environmental, Geotechnical and Civil Engineering projects. He has managed many nationwide environmental assessment, contamination assessment and remedial action programs as well as property condition assessments for developers, financial institutions, insurance companies, attorneys as well as governmental agencies. In addition, Mr. Schechter was retained as an expert witness for several litigations involving the performance of Environmental Assessments.

Mr. Schechter was also a Partner, Regional Manager, Office Manager and Principal-In-Charge with Dames & Moore and URS where he managed their Boca Raton and Jacksonville, Florida Operations. In this role, he was responsible for all technical work product.

**EMPLOYMENT HISTORY**

- RADISE International, LC, Palm Beach Co., FL, 2018-present  
Engineer
- Gulf Engineers & Consultants, Palm Beach Co., FL, 2014-2017  
Strategic Advisor
- URS Corporation, Palm Beach Co., FL, 1999-2012  
Office Manager and Vice President
- Dames & Moore, Palm Beach Co., FL; and Cranford, NJ, 1984-1999  
Partner, Senior Vice President and Northeast Regional Manager
- Ebasco Services, New York, NY, 1981-1984  
Senior Geotechnical Engineer
- Stone & Webster, New York, NY, 1975-1981  
Geotechnical Engineer
- Mueser Rutledge, New York, NY, 1972-1975  
Geotechnical Engineer

**REPRESENTATIVE EXPERIENCE**

**REPRESENTATIVE ENVIRONMENTAL EXPERIENCE**

**SFWMD Lands Acquisition Program**

URS had a multi-year environmental contract to assist the SFWMD (District) in their lands acquisition program. Prior to the District accepting new lands into their program, a Phase I and if necessary Phase II program was performed. Since many of these lands that were being acquired were formerly used for agriculture, pesticides, herbicides, cattle dip vats and other environmental concerns were often identified during the Phase I ESA program. Following the Phase I ESA, those properties with environmental concerns were further investigated during the Phase II program to further evaluate whether the concerns were real. At the completion of the Phase II program, those properties where environmental issues were confirmed, were evaluated by performing a contamination assessment. At the completion of the contamination assessment, a cost-effective Remedial Action Plan (RAP) was developed to provide a



**Andrew Schechter, PE**  
**RADISE International, L.C.**  
**Engineer**

path forward for the site soil and groundwater to meet State soil and groundwater standards. On many of these programs, Mr. Schechter served as the Senior Reviewer and often the Responsible Engineer.

*Alta Congress Residential Development, Delray Beach, FL*

Mr. Schechter served as the Project Director for the Alta Congress Residential Development which was located on a portion of the former Delray Beach Golf Course. Previous environmental assessments indicated that arsenic and other pesticides were present on portions of the property. URS reviewed the previous Phase I & II ESA's and performed additional sampling to oversee the soil management plan. In addition, URS performed independent Phase II sampling to further delineate soil contamination and subsequent removal. Following the completion of construction, URS performed radon testing of ground floor units and developed a radon mitigation plan for those units exceed EPA Guidance Criteria.

*Tel Aviv Hilton - Phase I ESA, Tel Aviv, Israel*

As part of an overall environmental due diligence program, URS was selected to perform Phase I ESA's at selected Hilton Properties worldwide. Due to the sensitivity of the potential acquisition, Mr. Schechter was requested to travel to Tel Aviv and personally perform the Phase I ESA of the Tel Aviv Hilton in Tel Aviv, Israel. The scope of work included an inspection of the diesel fuel tanks and in-house drycleaning facilities. Following the site visit, Mr. Schechter meet with local Consul to request certain government records required to complete the assessment and evaluation. Mr. Schechter prepared the Phase I ESA Report.

*Phase I & II ESA's and Corrosive Drywall Abatement, Miramar, FL*

Mr. Schechter served as Project Director on a large Phase I and II Environmental Site Assessment at a vacant parcel in Miramar, Florida. In addition to the standard scope of work, Electro Magnetic Field testing was performed to evaluate the potential impact from nearby overhead power lines. Upon completion of the project, the Owner suspected that Corrosive (Chinese) Drywall may have been used throughout the development. As a result, URS developed a methodology for identifying and delineating the extent of corrosive drywall in a residential garden apartment complex. Using field testing measures to measure sulfur content in wall as well as intrusive techniques to identify impacted copper surfaces on wiring and air conditioning coils, URS was able to cost effectively provide construction oversight services during the abatement project. All corrosive drywall was removed along with impacted wiring and appliances.

*Phase I & II ESA's Nationwide Program*

Mr. Schechter served as Project Director on many Phase I and II ESA's nationwide as part of Becknell Industrial's expansion program. Most of the facilities were large industrial type warehouse structures. For these properties, the site history was reviewed, regulatory status ascertained and a visual inspection performed, prior to the preparation of the report. Mr. Schechter was responsible for coordinating the projects, assigning appropriate personnel and reviewing the results of the Phase I and if necessary Phase II reports.

*Contamination Assessment and Remedial Action Program for Underground Storage Tanks*

Mr. Schechter was the Project Director and Responsible Engineer on numerous Contamination Assessments and Remedial Action Programs for underground storage tanks. He was also the Engineer-of-Record on many Spill Prevention and Pollution Control Plans (SPCC) for new petroleum tank installations. In this capacity, he oversaw design of remedial actions including air stripping, carbon treatment and groundwater pumping to mitigate the impact of petroleum in groundwater.



**Juan Carlos Vallejos**  
**RADISE International, L.C.**  
**GIS Analyst**

**Professional Registration and  
Certifications:**

- Certified Survey Technician NSPS-ACSM, 1998
- GPS Surveying Certification, Middlesex County College - Leica Co., 2001 (NJ)
- ArcGIS Certification, Rutgers University, 1999 (NJ)
- Cartography Certification, Rutgers University, 2000 (NJ)
- Computer Programming Certification, Lincoln Technical Institute, 1999, (NJ)

**Education:**

- BS Information System Management, Palm Beach State College, FL
- Associate Degree in Arts, Information Technology, Palm Beach State College, FL

**Capabilities:**

- GIS, CAD, Photogrammetry and Geospatial Technologies
- ArcGIS (ArcView & ArcMap) ArcGIS Online
- Civil 3D, Land Desktop and Microstation
- Citrix XenApp-Applications (DM, WMS, PoleForeman, 3D Solid Model, MapSight)
- Google Earth Enterprise, Agisoft, Context Capture and Recap
- AutoCAD Map 3D, SketchUp and Quantum GIS
- SharePoint, MS Office Pro, Office365

Mr. Vallejos has 20+ years of experience and a solid working experience in the fields of GIS, CAD, and Engineering/Surveying Technologies. He has developed a wide-range of skills managing project data within a geospatial platform to facilitate effective geo-design support for multidisciplinary projects. He assists Project Managers and Project Engineers in developing the most appropriate strategy to meet deadlines and reach project's objectives.

His experience includes working experience in developing a dynamic Geospatial platform by combining real-time information, latitude and longitude positioning, Photogrammetry processes and the use of drones, 3d scanners to produce data to be fed into a geospatial database. He is experienced in the implementation of photogrammetry processes for the creation of Digital maps, Aerial Triangulation, DTM, Topographic Mapping & 3D contouring. Experienced with Ortho-rectified aerial photo generation, and the interpretation and analysis of LiDAR information and working experience in the development and editing of Digital elevation Models (DTM). Solid knowledge and skills in the creation of topographic surfaces, Alignments, Profiles, Cross sections and Earthwork (cut/fill) computations.

**REPRESENTATIVE EXPERIENCE:**

**Storm Hardening Project, Florida Power & Light Co., 2014-2018**

Provide comprehensive mapping support for the Storm Hardening Project in Florida, by integrating GIS, CAD, GPS and surveying technologies into a Geospatial platform. Performed effective mapping data capture and processing, for large and multidisciplinary engineering projects. Performed record maps research and evaluation to identify easements, right of ways and existing utilities to be incorporated into the mapping system. Provided support to designers and technicians utilizing complex computer-based evaluation of project data within the Citrix XenApp platform. Technology integrator (CAD/GIS/GPS) with experience in planning and implementing appropriate technology-based strategies to meet deadlines and reach project's objectives.

**Aqueduct Improvement for the City of Panama, Republic of Panama, 2013-2014**

Provided intensive CAD and GIS support for the design and creation of Construction documents of over 100 kilometers of water main pipes. This project also involved a comprehensive mapping support for the study of the social-economic and environmental impact associated to the development of this major water infrastructure upgrade. The project's objective consisted in providing a comprehensive improvement to the quality and distribution of water for the city of Panama. The project included Design of water main piping networks, Water storage tanks and several Pump stations. Created terrain surfaces from field survey data to develop profiles and cross sections. Created proposed terrain surfaces to perform earthwork analysis and calculate volumes for cut/fill reports. Calculated slopes, inverts, and identify/resolve utility conflicts. Prepared large sets of construction documents incorporating design data, field survey information and data captured from drones and 3d laser scanning devices.

**South Florida Water Management District, Everglades Comp. C Buildout Project. 2005-2012**

Worked as CAD Manager and GIS coordinator for the Everglades Compartment C Buildout Project. Coordinated activities for GIS and CAD Technicians to design storm



**Juan Carlos Vallejos**  
**RADISE International, L.C.**  
**GIS Analyst**

water treatment areas (STAs), a 1600 cfs inflow pump station, small pump stations, inflow and outflow structures, bridges, canals, levees, and related civil works. Earthworks volume computations. Performed research of deeds and historic land records to solve cadastral issues and concerns. Collected, analyze, report, convert, and transfer data using ArcMap, Civil 3D and LDD applications. Intensive civil design and earthwork computations for this multi-million and multi-disciplinary project. Coordinate data sharing and validation with all consultants participating in the project.

**South Florida Water Management District. C-139 Basin Regional Study. 2004-2006**

Provided intensive CAD/GIS support to water modeling efforts for the C-139 Basin. Field survey data processing and integration into CAD and GIS systems. Developed surfaces, Plan, Profiles, Cross Sections and earthwork computations for over twenty miles of levees and canals. Implemented CAD/GIS data validation, QA/QC and data standardization for mapping purposes. Graphics and slides for meetings and presentations. Complete Project Setup and data coordination in Geo-Design environment by incorporating CAD, GIS, GPS and Geo-referenced satellite imagery, and using ArcGIS, Civil 3D and LDD applications. Responsible for coordinating data sharing related to the project with consultants vendors and clients.

**New York City Transit Authority, (New York City Subway) NY, 2001-2004**

Survey Technician. Created site asbestos and utilities plans, and mapped location of existing utilities. Defined alignments and associated stationing to create cross sections and profiles. Vectorized and geo-referenced over 600 plans into CAD format using Land Desktop, AutoCAD Map and Microstation for the creation of as built maps. Intensive field survey and CAD support in every stage of the project life cycle.

**Nextel/Northcoast Telecommunications, New Jersey and New York, 2000-2003**

CAD/GIS Technician. Preparation of Zoning (ZD) and Construction Documents (CD) for Cell-Phone Network expansion projects through New York and New Jersey. Provided intensive GIS/CAD data integration from field survey and municipal, county and State archives. Created spatial data layers using ArcGIS, Microsoft Access and Autodesk design applications.

**American Airlines, JFK International Airport Expansion. NY, 1998-2003**

Civil/Survey Technician. Assisted Project managers and senior engineers providing CAD and GIS support for activities related to the location of existing utilities. Performed field survey and mapping of all monitoring extraction wells in the American Airlines Terminal. Field data acquisition, processing and validation to populate the base map and maintain it current. Performed field and office work utilizing surveying equipment, Land Desktop, Excel and ArcView 3.2. Developed and implemented productivity strategies for the development of construction documents incorporating CAD, GIS, GPS and Satellite Imagery reference data.

**URS Corporation, 1998-2013**

Coordinated CAD and GIS activities for various engineering projects while successfully meeting deadlines and budget objectives. Solid background providing support and facilitating an optimal integration of high-end engineering applications. Ability in taking ownership of assignments, and performing assigned tasks through to completion. Effective communication in team environment, focusing attention in providing quality work products and meeting schedules.

**Harbor Consultants Inc., Cranford, NJ, 1995-1998**

Civil/Survey Designer and GIS technician for municipal, industrial, commercial and residential projects. Performed field and office work to provide CAD and GIS support for various civil engineering projects. Major and Minor subdivisions. Site plans, Title surveys and topographic surveys. Performed all aspects of software/hardware recommendation, installation, and preventive maintenance. Communicate effectively with internal and external contacts handling problems using tact and discretion.

**TPS Engineers & Surveyors, Rumson, NJ 1992-1995**

Responsible for the deployment/implementation of a LAN system to the office and introducing CAD technology to the company. Responsible for design and implement the appropriate transition from manual drafting to Computer Aide Design technology. Field/Office land surveying activities. Developed CAD standard guidelines and training procedures for new employees. Integrated Microsoft Office applications with CAD applications to improve production. Design/drafting and calculations for subdivisions, storm drainage, grading & geometric layout. Provided technical support and training in the use of CAD and Microsoft Office applications.



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**James D. Stoner, P.S.M.**  
*President*

### **Education**

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#### **Land Surveying Program**

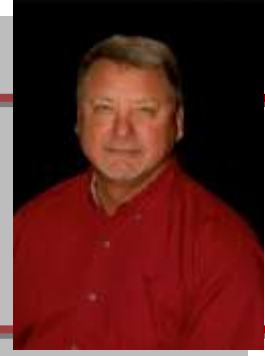
*Palm Beach Community College, 1979*

### **Professional Registrations**

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#### **State of Florida Professional Surveyor and Mapper**

*License Number LS4039, 1983*



### **Professional Affiliations**

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Former Vice President Florida Surveying and Mapping Society – State Level  
Former President Florida Surveying and Mapping Society – Broward Chapter  
Former Florida Surveying and Mapping Society – Area 6  
American Congress on Surveying and Mapping  
Leadership Broward

### **Professional Experience**

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- **South Florida Water Management District**
  - STA 3/4 – Topographic Survey
  - East Coast Buffer Cells 28 & 29 – Boundary Survey
  - C-4 Canal Conveyance – Topographic Survey
  - Lake Hicpochee – Boundary and Topographic Surveys
- **Broward County Aviation**
  - Annual Runway Approach Surface Surveys
  - Numerous Lease Parcel Surveys
  - Design Surveys for Expansion of Airport Terminals
- **Broward College Continuing Contract for Surveying Services**
  - North Campus – Boundary survey overall Campus
  - Central Campus - Boundary survey overall Campus
  - South Campus - Boundary survey overall Campus
  - Numerous Topographic and As-built Surveys for expansion of Facilities





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- **City of Sunrise Continuing Contract for Surveying Services**
  - Southwest Water Treatment Plant – As-Built Survey
  - Sunrise Road Improvements – Various Topographic Surveys
  - Five Vacant Parcels – Boundary Surveys
  - Park City Water Treatment Plant – Updated Boundary Survey
  - Passive Park – Topographic and Utility Surveys
  - City Hall Parking Lot – Topographic Survey
  - N.W. 44<sup>th</sup> Street – Topographic Survey
  - Lutheran Church Site Acquisition – Boundary Survey
  
- **Town of Davie Continuing Contract for Surveying Services**
  - Oakes Road Fire Station – Boundary Survey
  - Lift Station Number 11 Improvement Project – Topographic Survey
  - Silver Lakes Park – Construction Layout Survey
  - Wachovia Bank Parcels – Boundary, Topographic, & Tree Surveys
  - Parks & Recreation Building at Pine Island Park – Topographic Survey
  - Orange Drive – Topographic & Tree Surveys
  - Eastside Community Hall – Topographic & Tree Surveys
  - N-20 Canal – Topographic Survey
  - Public Works Gas Pump Station – Topographic Survey
  - S.W. 130<sup>th</sup> Avenue Canal – Topographic Survey
  - Sunny Lake Expansion – Boundary Survey



4341 S.W. 62nd Avenue, Davie, Florida 33314  
T: (954) 585-0997 • F: (954) 585-3927 • www.stonersurveyors.com

**Richard G. Crawford, Jr., P.S.M.**  
*Senior Project Manager*

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### ***Professional Profile***

**Mr. Crawford** has been with Stoner & Associates, Inc. for over twenty-seven years, and has over thirty-four years of experience within our industry. During this time, his experience has grown to include all of the types of surveys performed by our firm.

**Mr. Crawford** is well trained and proficient in the processing of survey data collection from a variety of data collection devices, such as GPS, Digital Leveling, and Conventional Total Stations. He is also proficient in the preparation of survey drawings using AutoCAD, MicroStation, and Carlson Survey.

**Mr. Crawford** is responsible for the day to day management and operations of the Field Crews and Office Support Staff. He is also responsible for preparing estimates for both Construction and Engineering Design Surveys.



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### ***Education***

**Associates of Science in Land Surveying**  
*Palm Beach Community College in 1994*

**Associates of Arts in Architecture**  
*Broward College in 1986*

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### ***Professional Registrations***

**State of Florida Professional Surveyor and Mapper**  
*License Number LS5371*

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### ***Professional Affiliations***

Florida Surveying and Mapping Society  
Florida Surveying and Mapping Society – Broward Chapter  
American Congress on Surveying and Mapping  
Leadership Broward



**Professional Engineering Services for  
Regional Transmission System Master Plan**  
Bid Number: PNC2116651P1

## 2. PROJECT APPROACH

2. PROJECT APPROACH



## 2 PROJECT APPROACH

Arcadis provides a comprehensive risk-based planning methodology, supported by effective data acquisition and analysis tools with a proven 15+ year record on wastewater conveyance and pumping facilities, including over 20,000 miles of force main, more than 250,000 equipment assessments and \$10 Billion in capital planning. Broward County will be confident in the risk assessment, prioritization and project definitions resulting in the right capital investment decisions to avoid critical failures, maintain a high level of service and deliver cost effective operation.

Following is an approach Arcadis has utilized on numerous asset management and master plans with similar scope and objectives. **Table 1** summarizes examples and results from previous study projects.

*Table 1: Results of Proposed Approach from Previous Study Projects*

Previous Study Project	Result
<b>City of Columbus, OH</b>	Integrated planning for pipelines and facilities (treatment plants and pump stations) resulting in a \$60-million capital cost savings for the 5-year CIP.
<b>Metropolitan District Commission, Hartford, CT</b>	Developed risk-based 10-year CIP and long-term funding projections to achieve service level goals within available budget for water and sewer pipelines and pump stations.
<b>Toho Water Authority, Kissimmee, FL</b>	Assessment and risk-based prioritization for 300 pump stations resulting in 10-year CIP and development of capital project business cases to integrate CIP planning for treatment plants, pump stations and pipelines.
<b>Emerald Coast Utilities Authority, Pensacola, FL</b>	Evaluation, modeling and transient analysis for over 300 miles of force main resulting in a risk-based 5-year and 10-year CIP.

### Task 1 Project Initiation

Project initiation sets the foundation for effective collaboration with Broward County staff to achieve consensus on the risk assessment results and capital investment strategy that will address the operational issues and better serve the County's retail customers.

#### Task 1A – Establish Project Teams

Arcadis recommends the team-based approach, illustrated in **Figure 1**, which has proven successful over many years to deliver effective master plans. The multi-team structure provides dedicated focus on key planning elements while fostering open communication and collaboration for efficient delivery.

*Figure 1: Team-Based approach provides effective knowledge transfer and efficient delivery of the Master Plan*



- Steering Team assures alignment with the County’s goals: Steering Team members include the County’s project manager (PM), other senior leaders involved in the Master Plan and the Arcadis PM. The Steering Team provides a “County-wide” perspective for alignment with strategic and long-term goals, engages additional stakeholders as necessary and reviews progress at key milestones in the Master Plan development.
- Work Teams deliver effective results: The Work Teams are cross-departmental, with County managerial and technical staff familiar with the force mains and master pump stations, working alongside Arcadis subject matter experts in the three key focus areas: capacity modeling, risk assessment and capital planning. Our experience has demonstrated that dedicated teams, with defined responsibilities and deliverables, are best able to incorporate all relevant information, generate compelling alternatives and perform the comprehensive analysis necessary to identify the most effective solutions.

The team-based approach provides effective capabilities transfer such that Broward County staff will have the knowledge and experience necessary to perform future updates of the Master Plan.

### Task 1B – Define Levels of Service

The levels of service will define performance requirements for the wastewater system aligned with Broward County’s goals and will facilitate the comparison of alternative projects and investment strategies as part of the CIP development.

Arcadis recommends defining levels of service for the pipelines and pump stations in the following key performance areas: capacity, reliability, condition, and risk, along with response options for adverse situations. Arcadis will provide examples from industry benchmarking and similar planning efforts for utilities in Florida and nationally to assist Broward County in defining the most appropriate levels of service to guide the master planning.

### Task 1C – Review Existing Information and Interviews

The first assignment for each of the project Work Teams will be to identify and assemble all existing data relating

to the current configuration, performance and condition of the force mains and master pump stations. Information is expected to include: GIS, drawings, operating history (SCADA data), maintenance and failure history (Maximo data), previous studies / master plans (future flow projections) and any previous inspection results, and operational objectives. Arcadis will review all information and conduct interviews with Broward County staff to further document overall performance, condition or other operational issues known to exist for the force mains and master pump stations.

## Task 2 Condition Assessment

Assessment standards evaluate all potential failure modes to fully prioritize repair and replacement (R&R) investments. The standards also provide Broward County a transparent and repeatable process for performing future assessments to update risk profiles and investment priorities.

### Task 2A – Pump Station Assessment

Arcadis provides a best practices assessment approach for pump stations based on guidance from the International Infrastructure Management Manual (see **Figure 2**), which includes both the physical and performance condition of the assets, necessary to evaluate all potential failure modes as summarized in **Table 2** on the following page.

**Figure 2: Best practice assessment approach evaluates all potential asset failure modes.**

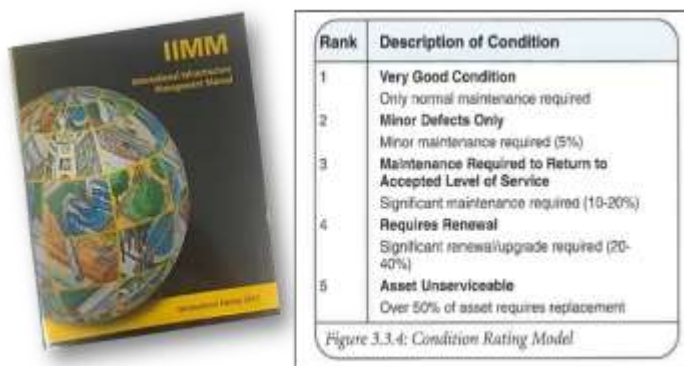


Table 2: Failure Modes from the International Infrastructure Management Manual

Failure Mode	Description
<b>Mortality</b>	Current state of repair and operation as influenced by age, historical maintenance and operating environment.
<b>Capacity</b>	Does not meet demand (flow, loading, storage volume, etc.).
<b>Level of Service</b>	Does not meet functional needs (regulatory, customer requirements, reliability, resilience).
<b>Efficiency</b>	Not lowest cost alternative (chemicals, power, pressures, labor, parts availability).

**Physical Condition (Field Assessment):** Evaluates the mortality failure mode for the current state of repair and operation of the asset. The physical condition is evaluated using defined criteria and scoring for each major asset class: electrical, instrumentation, HVAC, mechanical and structural. **Figure 3** shows an example of detailed physical assessment criteria and scoring.

Figure 3: Example physical condition assessment criteria for pump stations, from previous Hartford MDC project

**Performance Condition (Desktop Assessment and Interviews):** Evaluates the other three failure modes: capacity, efficiency and level of service. Performance condition is evaluated through desktop data reviews and interviews with staff knowledgeable about the design, operation and maintenance of the pipelines and facilities. Predictive test data, such as pump flow or efficiency, can also be incorporated into the assessment. **Figure 4** shows an example performance condition assessment matrix with criteria for capacity, regulatory, reliability, O&M issues, obsolescence and resilience.

Figure 4: Example performance condition assessment criteria for pump stations, from on-going Miami-Dade WASD project

Criteria	Evaluation	Performance Condition Assessment - Pump Stations				
		1 (Best)	2	3	4	5 (Worst)
Capacity	Ability to meet future and current capacity	Meets requirements for >20 years	Meets requirements for next 11 to 19 years	Meets requirements for next 5 to 9 years	Will not meet requirements in = 5 years	Does not meet requirements
Regulatory	Ability to meet future and current regulations	Meets requirements for >20 years	Meets requirements for next 11 to 19 years	Meets requirements for next 5 to 9 years	Will not meet requirements in = 5 years	Does not meet requirements
Reliability	Average time equipment is available when needed	99-100%	95-99%	90-94%	85-89%	< 80%
O&M Issues	Frequency of O&M Issues (excluding breakdowns)	None	Very Infrequently (Quarterly)	Infrequently (Monthly)	Frequently (Weekly)	Very Frequently (Daily)
Obsolescence	Reuse of Equipment Technology	Best Available Obsolescence expected >10 years	Technology Industry Standard Obsolescence expected >5 years	Technology Considered Appropriate Obsolescence expected in 5 years	Technology Nearing Obsolescence Spares still available	Technology Obsolete Spares not available
Resilience	Years to see level rise impact with projected USACE High water	No impact = Year 2108	Impact by Year 2088	Impact by Year 2048	Impact by Year 2030	Impact < Year 2030
	Share responsibility with and without SLR (USACE High water)	No impacts flow 100-year w/ SLR	Impacts flow 100-year w/ SLR OR 50-year w/ SLR	Impacts flow 50-year w/ SLR OR 25-year w/ SLR	Impacts flow 25-year w/ SLR OR 5-year w/ SLR	Current impacts with 2-year storm

Arcadis will provide examples from similar assessments to assist Broward County in establishing the standards to be used for the master pump stations. Following development of the standards, a pilot assessment of one pump station will be performed and reviewed with Broward County to validate the assessment standards prior to completing the remaining stations.

Each asset class will have a dedicated expert to perform the assessment in the field. Arcadis provides mobile data collection via our AssetHound® tablet application (see **Figure 5**), which provides built in menus to enforce the assessment criteria for fast and accurate data collection. All field data is centralized in one database for effective quality review. The asset list from Maximo can load into the AssetHound database and any additional assets found in the field can be added during the assessment. Broward County will benefit from an updated asset register which can be reloaded to Maximo.

**Figure 5: Arcadis uses AssetHound™ tablets for fast and accurate data collection on all assessment projects.**



### Task 2B – Force Main Assessment

Arcadis recommends a comprehensive force main assessment approach, which goes beyond just desktop analysis, to include observations at available access points, such as air release valve (ARV) structures, combined with non-destructive testing (NDT) where appropriate for the pipe material. Arcadis provides broadband electromagnetic (BEM) assessment technology to evaluate wall integrity of ferrous pipe. The BEM tool can be utilized to look for pipe wall thinning at the high points (ARV locations), which are principle failure points on force mains, and in small vacuum excavations to expose the pipe crown. **Figure 6** shows BEM tests at an ARV and a small excavation along the force main.

**Figure 6: Example force main field assessment at JEA using BEM**



The assessment approach utilized by Arcadis, including; desktop analysis, field observations and NDT where possible, will provide a comprehensive evaluation to identify the risk of structural and operational driven force main failures. The principle failure modes in force mains include mortality, capacity, and efficiency. The desktop assessment begins with an estimate of the effective useful life (EUL) based on pipe material and then adjusts the estimate up or down depending on failure history, operating parameters (flow, pressure, and surge) and other known field conditions (soil parameters, construction method, and external loadings). Field observations and NDT results, where available, are then incorporated into the EUL estimate. Once the EUL estimate is finalized, a deterioration curve can be developed to establish uniform condition scoring using the pipeline age.

**Figure 7** shows an example deterioration curve for a ductile iron force main, which then forms the basis for long-term replacement planning EUL estimates. Since the deterioration curve is based on material and operating conditions, a single force main can be subdivided with different EUL estimates if it includes different materials, installation years or operating parameters.

**Figure 7: Example ductile iron force main deterioration curve developed with Lee County, FL**

The force main capacity and efficiency (transient) assessments will be determined through the modeling (see **Tasks 5 and 6**). The failure mode with the worst score carries forward to the risk-based prioritization. For example, a force main in acceptable physical condition would be considered “failed” if operating velocities and/or pressures are unacceptably high.



### Task 3 Risk-Based Prioritization:

The full risk-based prioritization approach is illustrated by Figure 8. In addition to the likelihood of failure determined by the condition assessment, risk considers the consequence of failure and the availability of redundancy to mitigate failure impacts. The risk scores normalize the evaluation and provide for an “apples-to-apples” comparison to prioritize projects for assets of different types and functions.

The consequence criteria will be developed for the force mains and the pump stations following the triple bottom line principal, which incorporates the economic, social and environmental impacts of a failure. Arcadis will provide examples of consequence scoring from similar planning projects, including Florida utilities, to assist Broward County in developing the optimum scoring approach. Figure 9 shows an example of triple bottom line consequence criteria developed for pump stations.

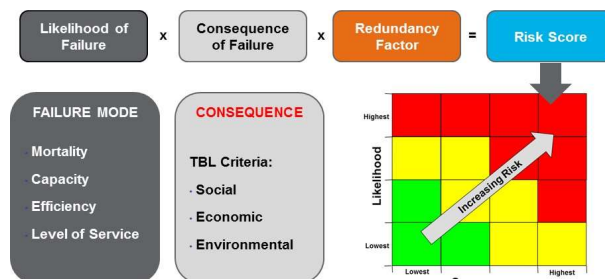
Figure 9: Example consequence of failure criteria, from previous Toho Water Authority project

Consequence of Failure Assessment – Pump Stations						
Category	Criteria/Measure	1	2	3	4	5
Economic	Replacement Cost	<\$250,000	\$250,000 – \$1,000,000	\$1,000,001 – \$3,000,000	\$3,000,001 – \$10,000,000	>\$10,000,000
	O&M – Staffing impacts for asset replacement/ emergency response	No impact	Low impact <=2 FTE for <=1 day	Moderate impact 2=FTEs for <=1 week	High impact 2=FTEs for >1 week, or emergency contract	N/A
Social	Service Disruption Magnitude	Station with 2 pumps	Station with 3 pumps	Station with 4 pumps	Station with 5+ pumps	N/A
	Public Health & Safety and Utility Regulation	Reroute station	N/A	Station utility located in subdivision or commercial center	Station can cause upstream back-ups with 3rd party damage, and/or is located near to a school	N/A
Environmental	Potential for sewage discharge - proximity	N/A	N/A	Adjacent to a stormwater system	Adjacent to a water body	N/A
	Response time repaired before secondary sewer overflow	No impact	<=4 hours	2 to 8 hours	<2 hours	Immediate

Figure 10: Arcadis RRPS tool performs risk-based planning scenarios to optimize the CIP



Figure 8: Best practice framework developed by Arcadis for all risk-based planning



The Arcadis Renewal and Replacement Planning System (RRPS) database will be used to perform the prioritization scoring and analysis, including workshops with Broward County to review and finalize all data. The RRPS, shown in Figure 10, is a risk-based capital planning tool for pipelines and pump stations, which runs inside of ESRI GIS and requires no additional software licensing or skills beyond traditional GIS. The graphical dashboards provide for effective workshops and allow staff to better visualize the condition and risk profiles and reach consensus on the best planning and investment decisions.

The RRPS database applies all the decision criteria developed for the risk evaluation, including: service levels, deterioration curves, condition scoring and consequence evaluation to perform the following analyses:

**Risk Prioritization:** Calculates the priority (risk score) for individual assets to evaluate the risk profile for each force main and master pump station, and fully define required investments.

**Repair versus Replacement:** Provides decision support to compare a repair option versus replacement to optimize life cycle costs in overall CIP development.

**Cost Estimates:** Costs are developed directly in the RRPS database customized to the pipelines, equipment and service conditions for accurate project cost estimates.

The risk score range, calculated by the RRPS is 1 to 25 and provides the initial investment prioritization as summarized by Table 3 on the following page.



**Table 3: Risk-Based Prioritization for CIP Planning Years**

Risk Score	Planning Years	Comment
20 to 25	1 to 5 years	Typical planning horizon for 5-year and 10-year CIP
15 to 19	6 to 10 years	
10 to 14	11 to 20 years	Long-term financial planning
<10	None	Beyond long-term planning horizon

Following the prioritization of individual pipeline and pump station assets, the RRPS is then utilized to develop logical projects by asset type, location and function based on the overall condition and risk evaluation. The RRPS then provides for “what if” scenario analysis based on defined annual spending limits, system wide risk levels or a combination of both. **Table 4** summarizes the capabilities of the RRPS planning tool.

**Table 4: RRPS Planning Tool Capabilities Summary**

RRPS Function	Description
<b>Asset Inventory</b>	Accepts full asset inventory from GIS and CMMS with asset ID and attribute information
<b>Effective Useful Life</b>	Assigns EUL based on asset class with an unlimited number of classes. Data tables have reference EULs from previous projects.
<b>Condition Assessment</b>	Follows full IIMM best practices for physical and performance scoring using a 1-5 rating and customized category weighting.
<b>Risk Calculation</b>	Also follows IIM best practices, including triple bottom line consequence of failure evaluation and redundancy allowances if desired.
<b>Asset Costing</b>	Follows AACE Level 5 guidance
<b>Repair vs. Replace</b>	Considers repair versus replace based on risk, condition and EUL.
<b>Project Definitions</b>	Assets are assigned to projects following a facility hierarchy, geography or programmatically by asset type, cost and risk.
<b>CIP Scenarios</b>	Calculates system wide metrics for condition, risk and annual cost based on service level goals, set investment amounts or both.

## Task 4 Business Cases and Capital Planning

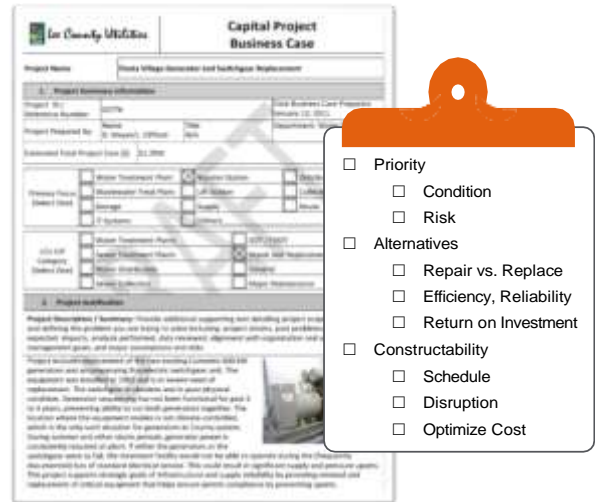
The use of business case evaluations (BCE) for capital planning provides Broward County a best-practice approach resulting in a defensible and cost-effective CIP. The documentation developed for each project BCE allows effective annual reviews of the CIP making it easier to incorporate new data and adjust project priorities as future conditions require.

In addition to the asset risk scores, the BCE documents the project development process including alternatives analysis and constructability, as follows:

- **Alternatives Analysis:** Where replacement is determined necessary by the risk assessment, the BCE will document the alternatives considered, such as different equipment types, or design configurations, to optimize life cycle costs including energy use and reliability.
- **Constructability Review:** Considers the sequencing of projects throughout the CIP to optimize schedules, minimize operational disruptions, and optimize cost.

Figure 11 shows an example of a BCE template developed for Lee County Utilities to prioritize pipeline, pump station and treatment plant projects for their 10-year CIP.

Figure 11: BCE templates document CIP project priorities

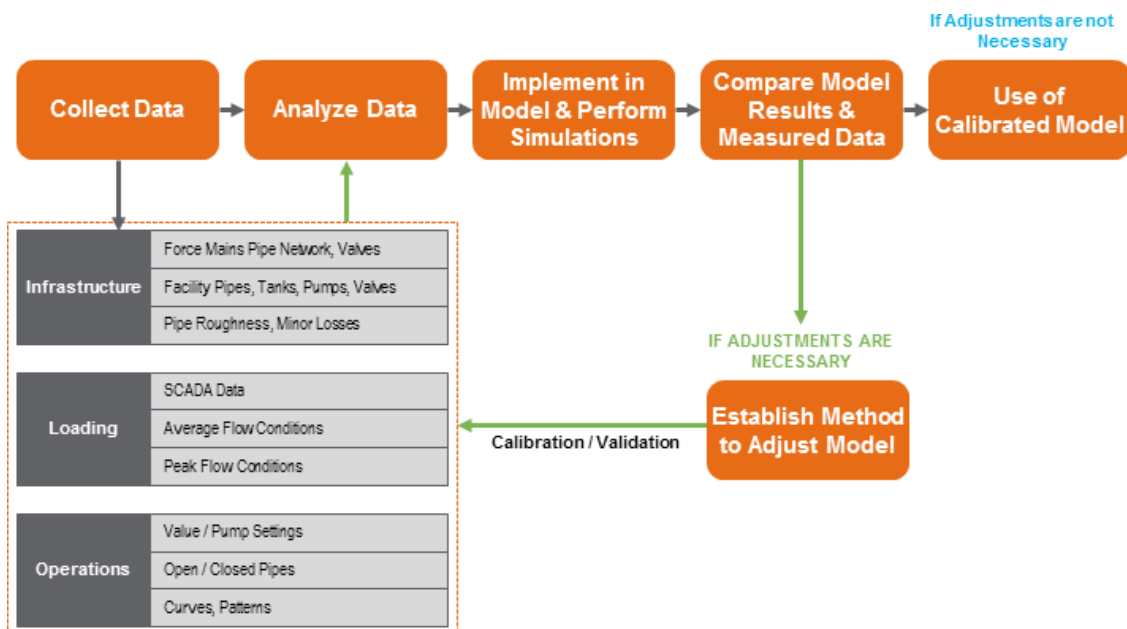


## Task 5 Hydraulic Model Development

Arcadis will develop the hydraulic model using InfoWater. The initial phase of this task will seek to collect, review and assess system infrastructure and operational data. Following an assessment of data, the model will be developed and calibrated to represent multiple system conditions, including dry weather and wet weather operations. The model results for analysis of current flows and future projections will be utilized in the risk-based planning to represent the capacity failure mode for the prioritization of force main and pump station improvements. Figure 12 presents our framework for model calibration, which has been applied successfully for over 30 hydraulic models.

## Task 5A - Data Acquisition, Evaluation and Management

Figure 12: Model development framework proven successful for over 30 projects



The data acquisition, evaluation and management phase builds the foundation for the evaluation by collecting necessary information, processing and screening that information, and providing tools and structures to document and store the information. Arcadis uses geographic information systems (GIS) technology to manage data, link spatial attributes to hydraulic models, and visualize modeling results. Arcadis has over 15 GIS-certified staff, with significant resources located in our local Florida offices. We are ESRI business partners and have developer network subscriptions, which give access to the latest software and technical support to ensure effective use of ArcGIS.

During this task, we will apply the available GIS data and populate missing information, as needed. This will provide the backbone necessary for a successful hydraulic capacity analysis. Arcadis will compile, review, prioritize and validate existing data for potential use. Arcadis will work closely with County staff to identify and correct potential data errors. This includes fixing abnormal connectivity (flow) issues, acquiring missing data at critical structures, or filling in missing attributes (e.g. invert elevations). Once the data has been validated, a model extract is prepared, and the modeling team begins its process.

### Task 5B - Import Pipes and Facilities

The model development will be based upon importing the GIS pipe data, using additional information from as-built drawings of existing facilities as necessary. All master pumping stations and force mains will be included in the model. Flow tributary to each pump station will be represented by an inflow node corresponding to the associated SCADA flow data available at each pump station. Specific activities to be performed will include:

- Perform data conversion: convert GIS pipe shapefile to model links and nodes.
- Import elevation data: Arcadis will import elevation data into the model from local data sources such as county contour maps or a digital elevation model (DEM) if available in the North American Vertical Datum of 1988 (NAVD DATUM 88). Critical high and low elevations for all areas will be included as model nodes because the model will serve as a base for the transient modeling task.
- Add system facilities: once the pipe network is in place in the model, Arcadis will add all critical facilities including pumping stations, control valves, and flow equalization facilities. The detail required for model development at these facilities are typically not included in the GIS databases, and therefore, these facilities must be added manually based on as-built drawings, pump curves and other data provided by the County.
- Assign initial pipe roughness: pipe roughness coefficients will be assigned based on pipe size, age, material and other factors or calculations currently used by Broward County.

### Task 5C - Model Loading

Model loading is a critical step in the development of a dynamic hydraulic model. As part of the data evaluation task, Arcadis will identify dry and wet weather pumping operations and runtimes. Both average dry weather loading and peak wet weather loading conditions will be simulated in the model.

### Task 5D - Model Calibration

Since the model will only be as good as the information used to develop it, a critical component of this effort is the comparison of the model results to measured data. Using available data, Arcadis will adjust the input parameters so that the model output reasonably matches the operational conditions recorded via SCADA, including pump run times, upstream and downstream pressures and measured flow rates. We will work closely with County staff during the calibration process to understand any anomalies and develop solutions. Calibration will proceed until the model adequately aligns with field data within industry

standards for model calibration. Although we plan to leverage existing data to the greatest extent possible, sometimes additional field data collection is required. If needed, Arcadis will work with Broward County to collect additional data within the force main network.

## Task 6 Transient Model Development

Arcadis will develop the transient model using InfoSurge. The transient model will be based on the calibrated hydraulic model developed in Task 5. The model results indicating any unacceptable pressure transients will be utilized in the risk-based planning to represent the efficiency failure mode for the prioritization of force main improvements.

### Task 6A - Model Development

Transient modeling requires additional data input, including:

- Pipe wall thickness/pressure classifications, supports, joint restraints and expansion joint types.
- Valve closure times (or valve speed and type), valve manufacturer and models
- Pump start-up and shut-down speeds. Pump and motor data (if available).
- Location and operation of surge anticipation, suppression or relief equipment such as pressure vessels, air relief valves, combination valves, etc.

Arcadis will prepare and submit a request for specific data needs and review available information with Broward County.

### Task 6B - Model Calibration

The transient model will be built upon and following the calibrated hydraulic model with calibration based on available pressure data. Due to the nature of transient modeling evaluation occurring within seconds to minutes duration, often SCADA data at an hourly or even 5-minute resolution is not sufficient for transient calibration. As part of this task and the data evaluation associated with the transient model development, Arcadis will work with the County to determine any additional data collection needs, if required, to achieve adequate transient model calibration.

### Task 6C - Transient Model Analysis

The transient evaluation will begin with establishing desired level of service pressure thresholds for each pipe cohort based on the pipe rating and any available failure data. Once pressure thresholds are developed, the model will be simulated to evaluate the impact of pump operations at each of the system's pumping stations during peak flow conditions. Pump startup and pump shutdown and other operational scenarios as required will be simulated as the origination of pressure transients.

**Figure 13** shows a transient simulation for valve closures. Various improvement alternatives will also be simulated to address transients and included as part of the risk-based project prioritization and capital improvement plan development.

## Task 7 Emergency Response Plan

Arcadis will collaborate with County staff to develop a wastewater spill-specific Emergency Response Plan (ERP). This ERP will include the subject areas listed in this solicitation. Arcadis will conduct interviews with internal and external stakeholders and review existing plans to better understand the County's current emergency preparedness plans and capabilities. The interviews will focus on internal and external stakeholders who have been involved in historical response actions to better understand the challenges during the historical operations. The ERP will be developed according to industry best practices and federal guidance documents such as:

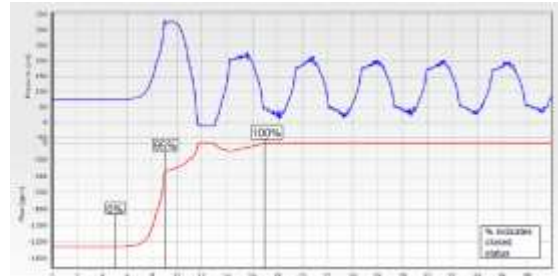
- ANSI/AWWA G440-17 Emergency Preparedness Practices
- National Incident Management System (NIMS)
- Incident Command System (ICS)
- National Response Framework (NRF)
- Comprehensive Preparedness Guide (CPG) 101, Developing and Maintaining Emergency Operations Plans

Arcadis will draft the ERP and review the plan with key County stakeholders in a workshop setting. Once this review is complete, the Draft ERP will be provided to the County for review before finalizing.

This ERP may be a standalone document or an annex to current emergency planning documents. The project team will determine the best way to integrate the new ERP with the existing plans. Regardless of how it functionally fits within the County's current emergency response planning documents, it will be fully integrated with existing plans. This will ensure consistency with other plans and prevent confusion during response operations.

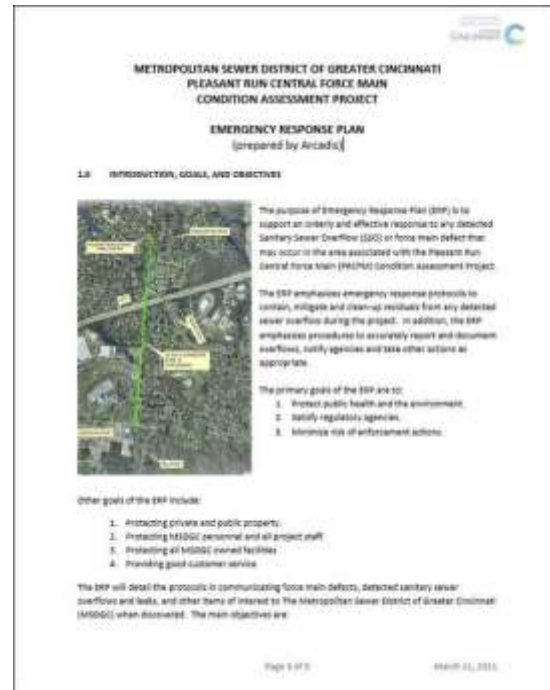
For Jacksonville Electric Authority Arcadis ranked the consequence of failure for over 100 large diameter force main crossings of roads, rail and water bodies using GIS and Google Maps to understand the priorities for either creating operational protocols or installing additional infrastructure to enable reliable operations during emergency operations. A field evaluation on the highest consequence of failure mains was also performed to determine the ability to apply

**Figure 13: Transient analysis provides information on potential force main failure modes for comprehensive risk-based plan**



operational protocols for bypass in emergency situations or if additional valves or parallel crossings should be installed to effectively continue operations during emergency events.

**Figure 14: Example force main ERP prepare for Cincinnati MSD**





**Professional Engineering Services for  
Regional Transmission System Master Plan**  
Bid Number: PNC2116651P1

### 3. PAST PERFORMANCE



3. PAST PERFORMANCE

## 3 PAST PERFORMANCE

Arcadis is proud to bring the County the **Best Team**, providing a fresh look at our system by our National Experts in Risk Based Planning located in Florida and complimented by our trusted and experienced teaming partners. Our **Experienced Project Manager**, Chris Barlow, will lead our robust and solid team with the capacity to deliver your Regional Transmission System Master Plan successfully and meeting all County expectations and objectives, utilizing **Proven Tools** developed over our long history of providing Risk-Based Planning services to similar utilities around the country.

**Below, you will find our references. The pages that follow include specific project examples for each scope area.**

### References

As required, we have provided the following references as proof of our qualifications and previous experience. The Vendor Reference Verification forms for Arcadis and our trusted subconsultants are included in Section 7. **All references have also been submitted as Vendor Verifications.**



**Toho Water Authority**  
**Robert Pelham, PE** | Director of Engineering  
951 MLK Boulevard  
Kissimmee, FL 34741  
407.709.3677

**Project:** Asset & Energy Management Services  
(including Lift Station Condition and Risk Assessment)



**City of Sugar Land, TX**  
**Robert Valenzuela, PE** | Public Works Director  
32700 Town Center Boulevard North  
Sugar Land, TX 77479  
281.275.2167

**Project:** Sugar Land Water Main and Lift Station  
Risk-Based Replacement Plans




**Miami-Dade County Water & Sewer Department**  
**Maria Suarez** | Chief, Budget  
3071 Southwest 38th Avenue  
Miami, FL 33146  
786.552.8038

**Project:** Water and Sewer Rates, Fee Analysis and  
Bond Engineering Services

## Master Planning and Asset Management Experience

Below, we highlight additional experience in asset management and master planning throughout the U.S. This experience will prove to be highly beneficial to the County, in your master planning needs.

	Condition and Risk Assessment	Capital Planning and Prioritization	Long Term Funding Analysis	Levels of Service	Planning Tool Development	Treatment and Pumping Stations	Sewer Pipelines
NYCDEP (NY), Risk Assessment, Prioritization and Asset Management							
Greater Cincinnati Water Works (OH), Comprehensive Asset Management Plan							
Columbus DPU (OH), Asset Management Program Development							
The Metropolitan District Commission (CT), Water Distribution and Conveyance System Asset Management Program							
City of Sugar Land (TX) Water Main Replacement Planning							
City of Houston (TX) Southeast Purification Plant Asset Management							
Dallas Water Utility (TX) Interceptor Condition and Risk Assessment							
City of Austin (TX), Utility Infrastructure Asset Management Program							
Tarrant Regional Water District (TX) Asset Management Program							
Lee County Utilities (FL), Asset Management Program Implementation							
Toho Water Authority (FL), Asset Management Assistance							
Metropolitan Sewer District of Greater Cincinnati (OH) Asset Mgmt Implementation							
DC Water (DC) Facilities Plan and Business Case Development							
Spartanburg Water System and Sanitary Sewer District (SC), Asset Management Capital Planning							
Loudon Water (VA), Asset Management Program Planning							
The Water Works and Sewer Board of the City of Birmingham (AL), Capital Planning, Performance Measures and Maintenance Management Program							
City of San Diego (CA) AC Mains Replacement Master Plan							
Passaic Valley Sewerage District (NJ) Asset Management Plan							
Westchester County (NY) Asset Management Plan							
Phoenix 91st Ave WWTP Condition & Risk Assessment for Capital Plan							
JEA (FL) Large Diameter Pipeline Evaluation and Replacement Planning							



## Modeling Experience

Below, we highlight additional experience in modeling projects throughout the U.S. We will bring this expertise to the County for this important project.

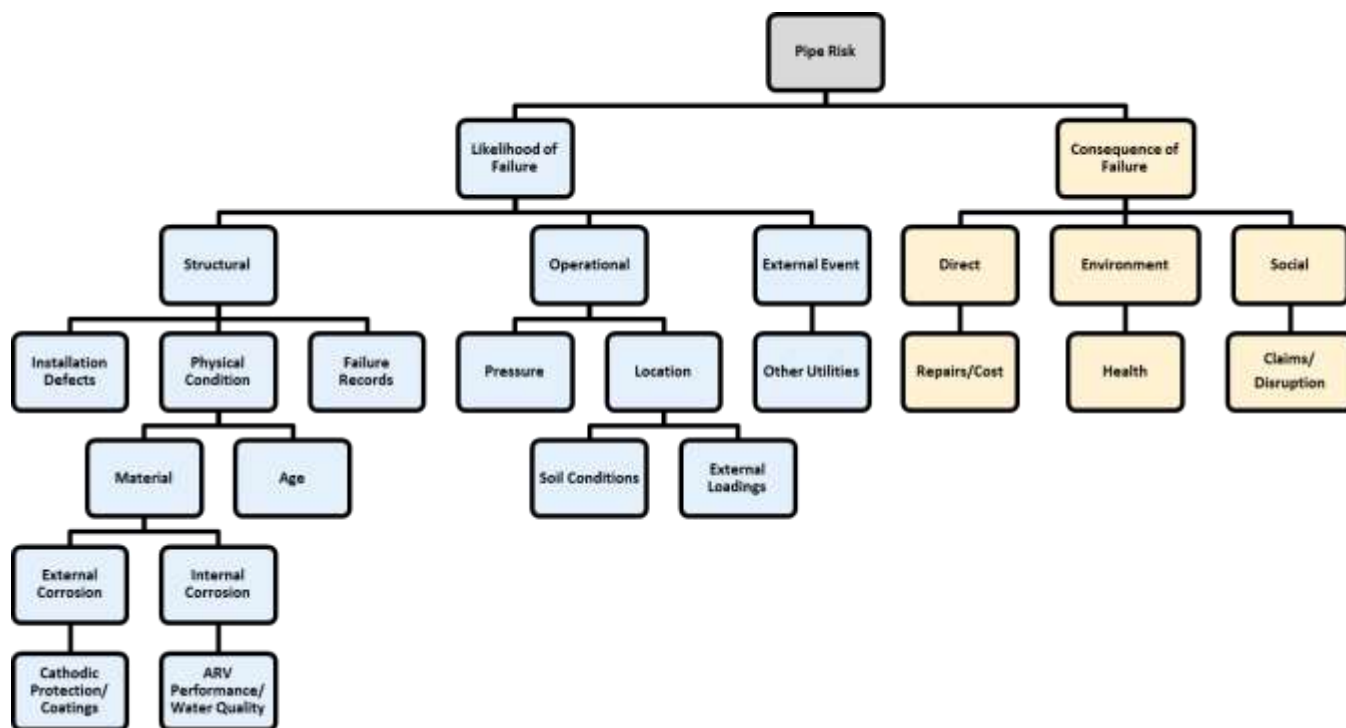
Relevant Project Experience	Condition Assessment/Field Studies	Flow Monitoring	GIS/GPS/Survey/Data Management	Collection System Modeling	I/I Studies	Sewer Infrastructure Master Planning	Green Infrastructure	Storm Water Management
Allegheny County Sanitary Authority, Pittsburgh, PA/ Upper Allegheny/Pine Creek Basin Facilities Plan								
Buffalo Sewer Authority, NY/ CSO L TCP								
Butler County, OH / Sewer System Master Plan								
City of Akron, OH / CSO Modeling								
City of Canton / Cleveland Avenue/6th Street Hydraulic Study								
City of Columbus, OH / SSCM 2012 Update								
City of Columbus, OH/ Early Ditch I/I Study								
City of Columbus, OH/ Overall Engineering Coordination - Wet Weather Management Program								
City of Fort Wayne, IN / CSO Impact Characterization, Combined Sewer Capacity Improvement Program, CSO L TCP and Wastewater Master Plan								
City of Hudson, OH/ Brandyvine Creek Tributary Study and LOMR								
City of Lancaster, OH / CSO LTCP, Master Plan for Water and Wastewater Improvements, Wastewater Collection System Eval and Sewer Separation Program								
City of Lorain, OH / SSO Mitigation, RDII Mitigation, RTC Optimization								
City of Piqua, OH/ Abatement of SSOs. I/I Investigations								
Lake County, OH / Darnell Creek/Lake Road Culvert Improvements								
Lake County/City of Painesville, OH/ Tiber Creek Drainage Basin Study								
Metropolitan Sewer District of Greater Cincinnati (MSDGC), OH/ GI As-Needed Services								
MSDGC, OH / Lower Mill Creek Infrastructure Planning								
MSDGC, OH / West Fork Branch Model/Analysis								
Montgomery County, OH / Sanitary Sewer Modeling and Master Planning								
New Castle County, DE / North Brandyvine Sewer Program								
Sanitation District 11 of Northern Kentucky, KY/ Infrastructure Consultant/ Adaptive Watershed Management Program								
SD1 of Northern Kentucky, KY / Large Diameter Sewer Assessment Program								
Summit County Department of Environmental Services, OH I Mudbrook Basin Sanitary Sewer Model								

Arcadis brings a team of local and national expertise with extensive experience, knowledge and proven technical skills in the areas required by the County, We are showcasing, in the following pages a few recent project descriptions for each corresponding discipline.

## 1. Projects Performing Detailed Risk-Based Prioritization for Pipeline Improvements

Arcadis has been a leader over the past 10 years in risk-based evaluations with thousands of miles of sewer and water pipelines completed for peer utilities throughout the Country. This level of experience assures Broward County of a comprehensive desktop force main prioritization. Key decisions such as where and when to allocate funds for rehabilitation or replacement for pipelines will become transparent, resulting in greater efficiency and cost savings as well as stakeholder acceptance for the County. Most recently, Arcadis completed a risk based prioritized capital plan for over 1,000 miles of large diameter water and sewer mains for JEA in Jacksonville, FL.

Arcadis performs desktop risk assessments for pressure mains leveraging existing data from GIS and CMMS such as your Maximo system to comprehensively identify all potential risks of pipeline failure as shown in the tree below.



To expedite the review process, Arcadis' proven Data Profiler utility tool can be used that can evaluate the GIS and Maximo data available to support this program. The Data Profiler utility will quickly evaluate both the completeness and consistency of the data by extracting and compiling statistics on any or all source database tables and columns. Based upon our extensive experience the following pipeline attributes are key for successful desktop assessment.

- Installation Date
- Material
- Diameter
- Pressure
- Adjacency Layers (soils, zoning, roads, waterbodies, railways)
- Maintenance History
- Installation History
- Past Failure History (including date)

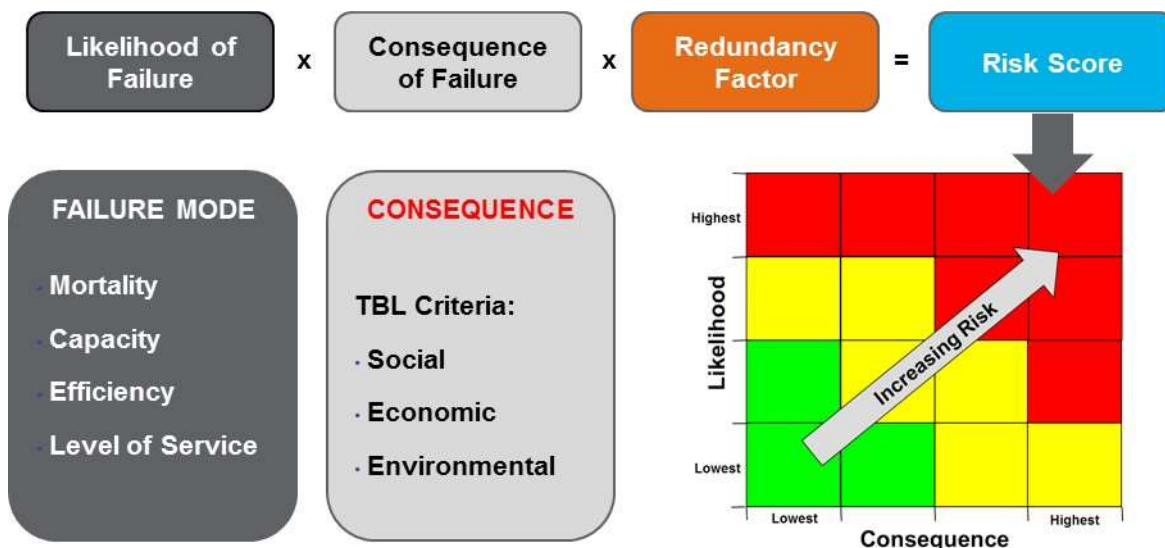
To effectively prioritize the pipe assets for rehabilitation or replacement and future inspections, the desktop risk assessment will be performed based on industry standards such as the International Infrastructure Management Manual, and Arcadis best practices and lessons learned from similar force main replacement planning projects such as JEA. The goal will be to use all available Broward County data identified. The assessment will consider the Condition (Likelihood of Failure) and the Consequence of failure to determine asset risk as shown in the figure below. Other failure modes such as level of service, capacity, and efficiency can be considered, however, the main focus for the desktop assessment will be on the mortality failure mode to understand aging infrastructure issues and the capacity failure mode to address future growth needs.

Reacting to a deficiency in commercially available software packages to successfully support risk based planning, Arcadis developed back in 2009 a software tool to facilitate risk based planning for pipeline assets as well as lift stations called the Renewal and Replacement Planning System (RRPS). This tool runs inside of ESRI GIS and doesn't require any special licensing or experience to use other than basic GIS skills. The Arcadis GIS RRPS can be configured quickly to meet the needs of any program and speed up the replacement planning process. The RRPS applies service levels, Rehabilitation and Replacement costs, deterioration curves (generated by analyzing failure history (pipelines) or condition data (lift stations) and Consequence of failure ranking to model budget scenarios and select the right assets for renewal in the capital plan. The tool has been successfully implemented and installed at over 20 utilities including Columbus DPU, City of Sugar Land TX, JEA, Lee County Utilities, City of San Diego, DC Water and others.

Example Project Map for San Diego, CA



Following, we present project examples of risk-based planning.



## CITY OF COLUMBUS: MASTER PLAN AND ASSET MANAGEMENT



### CLIENT:

Richard Westerfield  
City of Columbus  
614 645 7020

### YEAR PROJECT

COMPLETED:  
2017

### TOTAL FEES / COST:

\$4.4 million

### RELEVANT FEATURES

Pipeline Risk Based Replacement  
Planning  
Pump Station Condition and Risk  
Assessments  
Service Levels  
Master Plan Combining Hydraulic  
Modeling and Risk Based  
Planning  
Capital Program Development

### Our Role

## Master Planning

DOW initiated the Comprehensive Water and Distribution Master Plan to develop a single, prioritized plan for a CIP for source/treatment facilities over the next 30 years (to 2040) and for distribution system facilities over the next 15 years (2025). To deliver such a complex planning effort, Arcadis incorporated the key features listed below:

**Scenario Planning.** Arcadis conducted a series of scenario planning workshops to kick off the master planning activities. The workshop participants engaged in a comprehensive discussion of industry trends and identified critical uncertainties and their potential implications for DOW.

**Population and Water Demand Projections.** The population projections were established at five-year increments through the 2040 planning horizon.

The Arcadis team performed a detailed geographic information systems (GIS) exercise using georeferenced information on population, employment, land-use type and project development in the central Ohio area to determine where population expansion would occur and estimate the timing of growth. We also met with the City's planning staff and neighboring communities to refine the estimated timing and location of future development. This method of parcel-level planning facilitated the coordination of the City's GIS and future updates by MORPC. In addition, DOW will have the capability to track development by parcel and allow closer coordination with the water distribution system model.

**Water Supply Planning.** The project team provided a comprehensive review of the water supply plans, including both surface water and groundwater sources. The safe yield for each existing and planned supply source was reevaluated.

**Water Treatment Planning.** A fourth water plant was evaluated to determine if it provided sufficient system benefits, such as system reliability, energy savings, and/or water quality benefits. A Criterium Decision Plus (CDP) workshop was conducted to evaluate selected alternatives (sizing, timing, treatment capabilities) for the fourth water plant. CDP is a multi-criteria decision-making software package.

**Distribution System Analysis.** Arcadis incorporated the parcel-level planning demand projections into DOW's distribution system hydraulic model. The team used the model to identify, evaluate and recommend facility and transmission main improvements that would be incorporated into a system-wide CIP and to identify the infrastructure necessary to support future growth and provide basic water service goals, such as fire flow, chlorine residual and adequate pressure.

**Distribution System Water Quality.** The project team used the distribution system hydraulic model to perform a water quality analysis of the existing distribution system and future planning year scenarios.

**Water Main Rehabilitation and Replacement Program.** Preparation of the water distribution system master plan involved the development of a risk-based water main R&R program integrated with the overall asset management program across the entire DPU.

**System-wide Risk Assessment.** We developed GIS-based routines, including a multi-criteria consequence-of-failure evaluation and a condition scoring methodology for water main age, break rate and remaining useful life. Hydraulic model data was also used to assess capacity and fire flow. We assigned a risk ranking to individual water mains incorporating the physical condition, hydraulic performance and consequence of failure to prioritize projects in R&R planning.

**50-Year Water Main R&R Forecasting.** Arcadis used the risk assessment results to develop cost projections for water main R&R needs from 2010 through 2059. We developed a decision methodology to select the appropriate R&R techniques, including trenchless replacement and structural and non- structural rehabilitation alternatives. Final water main R&R projects were developed and scored through a business case template embedded in the GIS.

## Asset Management

Arcadis is a key member of the consulting team supporting the City of Columbus Department of Public Utilities' (DPU's) ongoing asset management program for water, wastewater, stormwater and power. Asset management tasks also are being performed in coordination with a water distribution system master plan project. The asset management program currently is in its fourth year of implementation, and our consultants are leading several important tasks as part of this effort:

Evaluation and implementation of high-priority enhancements to the Oracle Work and Asset Management (WAM) software application to better support the asset management program. This work included a comprehensive gap analysis of the current system and ongoing implementation of multiple enhancements and business process improvements, including revision of asset and accounting hierarchies, update of code tables, implementation of the asset class module for condition assessment and depreciation, and completion of interface with geographic information systems (GIS) to better support asset management and repair and replacement (R&R) planning for water mains and sewer assets.

Development and implementation of business case evaluation (BCE) tools and templates to support enhanced capital planning. This task included development of formal business case templates and guideline documents as well as triple-bottom-line analysis tools to support quantified cost/benefit factors across financial, social and environmental impacts. Work also included staff training and mentoring and ongoing support.

Development and implementation of a performance management methodology and key level-of-service measures to help drive the asset management program. This task included the evaluation and ranking of over 100 candidate level-of-service measures, development of comprehensive definitions and guidelines, and implementation of reporting tools and templates across the utility to help present a transparent picture of performance. Work also included development of business process flows and operational-level key performance indicators for each department. Benefits of this effort include enhanced customer service focus and improved customer relations, greater staff understanding of service levels and their relationship to day-to-day activities, and support of consistency and objectivity in capital improvement prioritization and decision making.

Development of condition and risk methodologies including standard procedures to assess condition, criticality and risk of linear and vertical assets. A comprehensive risk-based renewal and replacement strategy for water mains was developed as part of the parallel water distribution master planning effort.

The project resulted in significant organization and culture change across DPU's lines of business, with a core team in the Asset Management Office (AMO) managing and guiding the program. Business cases are now being developed and analyzed for most major projects, with identified savings of over \$50 million through these efforts. In addition, DPU maintenance staff are improving utilization and reporting through Oracle WAM, providing more effective analysis tools for AMO. Service levels are being effectively tracked and reported to senior management and other stakeholders, and development of operational performance metrics is underway. Condition and risk methodologies have been applied to a large portion of DPUs assets, with a detailed analysis of water main renewal and replacement needs forming a core foundation of the most recent master plan that will be implemented over the next several years through additional water system capital investment.

## THE METROPOLITAN DISTRICT: ASSET MANAGEMENT AND CIP PLANNING SERVICES



### CLIENT:

Jason Waterbury  
The Metropolitan District  
860.278.7850 ext. 3380

YEAR PROJECT  
COMPLETED:  
2017

TOTAL FEES / COST:  
\$686,449 to-date

### RELEVANT FEATURES

Pipeline Risk Based Planning  
Pump Station Condition and Risk  
Assessment  
Service Levels  
Capital Program Development

### Our Role

Arcadis performed a variety of asset Relevance to GLWA-CS-198 management and CIP planning projects for The Metropolitan District, including:

- **Water Distribution Asset Management Program.** Arcadis provided the District with a comprehensive asset management program that uses (Harfan IDSS) to develop a 45-year capital improvement project (CIP) plan to optimize replacement and/or rehabilitation of the water distribution system to maintain an acceptable service level, including 1,600 miles of water mains, valves, hydrants, storage tanks, and 19 pump stations.
- **Data Integration.** Pipe data from GIS, break history from CMMS, field pipe sampling, H2OMap hydraulic model, paving plans, and customer complaints. The HARFAN IDSS asset modeling software was integrated with the GIS and CMMS for an easily repeatable process for ongoing model simulations by District staff.
- **Service Levels.** Developed for distribution system asset performance to facilitate estimates of remaining life for replacement decisions.
- **Field Program:** Representative data was collected on different types and ages of water main to perform pipe condition assessments and soil corrosivity determinations to refine useful life estimates.
- **Capital Planning.** A risk-based approach was used where assets were prioritized based on physical condition, functional condition, and criticality factors. A detailed statistical analysis of the District main break data was performed that resulted in the development of pipe classes and deterioration curves. The HARFAN IDSS asset model was utilized to develop a 45-year schedule for replacement/rehab of water mains, transmission mains, storage tanks, valves, and pump stations. The CIP results from the model were exported back to the district's GIS to allow mapping and visualization of projects.
- **Training of District Staff.** Performed so that the District could generate an updated CIP using the Harfan IDSS asset model software.
- **WPCF Capital Needs Assessment.** Arcadis conducted a condition and risk assessment of the Metropolitan District's four wastewater facilities, allowing the district to develop a responsible 25-year capital plan. The scope of services included:
  - **Assessment Guidelines.** SOPs were established for consistent assessment of vertical asset condition and risk.
  - **Field Condition Assessment.** Performed for mechanical, electrical, instrumentation, structural and HVAC assets at the District's four WPCFs.

- **Risk-Based Capital Planning.** Development of effective useful-life estimates for all major asset classes to predict long-term replacement needs.
- **Business Case Development.** Identification of future regulatory requirements and technical advancements in equipment and/or processes that may have a fiscal impact on capital replacement.
- **Financial Planning.** Integrated the long-range CIP with the District's financial model, funding needs and affordability analysis.

*“Arcadis has demonstrated a high level of expertise and competence in the areas of development of an ISO 55000 compliant program with associated framework, levels of service, condition assessment and data analysis to develop the program and related elements.”*

*—Jason F. Waterbury, PE, Project Manager/Team Leader, Technical Services*



## LARGE DIAMETER PIPE EVALUATION & REPLACEMENT



### CLIENT:

Bob Cadle  
Program Manager  
JEA  
904.665.4498

### YEAR PROJECT COMPLETED:

February 2016 - Ongoing

### TOTAL FEES / COST: \$6 million To-Date

### RELEVANT FEATURES

Pipeline Risk Based Planning  
Capital Program Development  
Emergency Response Planning

### Our Role

JEA is the primary utility for Jacksonville Florida, providing electric, water, and sewer to the largest city, by land area, in the contiguous United States. They proudly serve an estimated 455,000 electric, 337,000 water and 261,000 sewer customers. The water, sewer, and reuse piping infrastructure of over 8,000 miles required to transport water and reclaimed water to customers and collect wastewater from customers represents a significant portion of the overall water and sewer assets that JEA operates and maintains daily.

JEA maintains an environmental commitment to provide reliable water and sewer services to their customers while protecting the environment from unplanned discharges, and recognizes that proper planning for replacement of the larger diameter pipelines, which have the most impact of failure to customers and the environment, is a very important activity to meet this commitment.

To this end, JEA retained Arcadis to develop a comprehensive plan to maintain, rehabilitate, and, if necessary, replace their most critical assets in a manner that maintains a high level of service to their customers and at the same time most efficiently utilizes their funding. Approximately 800 miles of critical assets have been identified as:

- Sanitary sewer force mains consisting of either cast or ductile iron
- Large diameter gravity trunk lines
- System critical water and sewer transmission lines
- Potable water lines serving critical users

### Data Evaluation and Risk Analysis

The desktop risk-based capital planning process involved estimating each of the 800 miles of pipeline assets' risk of failure using all currently available information to establish priorities (i.e. the higher the risk, the higher the rehabilitation or replacement priority for the Program). To assess risk, the program implemented industry-established best practices that consider both the likelihood of failure (how likely is it that the pipe will fail based upon its age, physical condition, and service requirements) and the consequence of failure (what is the impact of failure from a social, environmental, and financial perspective).

The Program established baseline likelihood of failure estimates utilizing all available information, including analysis of JEA's recorded failure and work order history, interviews with operations staff, analysis of previous condition assessments conducted by JEA and its contractors, industry-established standards, and Arcadis' databases of condition assessment and useful life estimates for similar utilities. Consequence of failure for each asset was established for each asset was established utilizing a triple-bottom-line analysis of consequence based on industry-established standards and incorporating JEA's specific needs and system priorities.

### **Asset Condition Assessment and Forecasting**

To support finalizing the Risk Analysis and developing the 5-Year Capital Budget, Arcadis has lead a team to conduct a dual-pronged non-destructive testing (NDT) condition assessment program focused on JEA's most critical assets, simultaneously targeting the most at-risk assets identified in the Risk Assessment and a representative sampling of other critical assets, evaluating the condition of approximately 281,000 feet of pipelines in Year 1 of the NDT program.

Condition assessments included soil sampling for corrosivity, Internal Acoustic/Electromagnetic testing of force and water mains using Echologics, Pure Technologies and Pica Corp tools, External Broadband Electromagnetic testing of force and water mains self-performed by Arcadis, and Closed Circuit Television (CCTV) inspection of gravity mains including sonar to identify debris levels. Results of these assessments were utilized to update or confirm the condition of the assets projected to be the most at-risk based on the available data and update the likelihood of failure estimates for all assets based on the representative sampling.

### **Project Prioritization and Capital Budget Development**

The outcome of the risk assessment and condition evaluation was utilized to recommend updates to JEA's Capital Budget, including identification of new projects and changes to project prioritization and packaging. Recommendations for the FY 18 - 22 CIP included 36 new projects comprised of 13 water projects and 23 sewer projects for a total cost of approximately \$112M. Arcadis is further supporting JEA's CIP development by preparation of project conceptual designs including justification, scope and preliminary estimated costs and schedules.

### **Other Plans and Studies**

Arcadis has recently been tasked to evaluate fore main Air release valve and pipeline appurtenance specifications for JEA as well as plan a comprehensive Air release valve inspections and replacement program. Additionally, the highest consequence of failure force mains that cross major roads, railways, and water bodies are being prioritized and analyzed for operations during emergency events. Bypass plans and or recommendations for the installation of additional valves and or parallel pipelines are being considered.

## NYC DEP: RISK ASSESSMENT, PRIORITIZATION AND ASSET MANAGEMENT



### CLIENT:

Jason Galea  
Project Manager  
New York City DEP BEDC  
718.595.5584

### YEAR PROJECT COMPLETED:

2009 - Ongoing

### TOTAL FEES / COST:

\$2.88 million

### RELEVANT FEATURES

Pipeline Risk Based Planning  
Pump Station Condition and Risk  
Assessment  
Service Levels  
Capital Plan Development

### Our Role

As part of the project team, Arcadis assisted the New York City Department of Environmental Protection (DEP), the largest U.S. public water system, to develop a comprehensive risk assessment and asset management program. The project involved development of comprehensive renewal and replacement requirements in support of four-year and ten-year CIPs across all three of DEP's operating bureaus. Key tasks in this project include:

- Comprehensive condition and risk assessment performed by multidisciplinary field teams to assess major structural, mechanical and electrical assets at DEP facilities including wastewater treatment plants, pump stations reservoirs, pipelines and tunnels.
- Development of formalized policies, procedures and methodologies for asset condition and risk assessment as well as capture of critical physical, asset management and financial attribute information while incorporating workshops and training for DEP staff.
- Development of data management tools to analyze, store and report on asset attribute information and risk analysis for use in CIP development, with the capacity for future uploads into DEP's existing CMMS systems.
- Project bundling and cost estimating for identified high-priority projects, including formalized policies and procedures in support of requirements for the four-year CIP.
- Development of a project prioritization methodology incorporating triple-bottom-line considerations of social, environmental and financial impacts to evaluate proposed projects through a formal business case process.
- Assistance with preparation of a final CIP document with financial projections, detailed business cases and a prioritized and validated list of proposed capital projects for DEP to present to both internal and external stakeholders.

Due to the success of the first phase of the project, DEP employed our team in performing a second phase. The work involved water and sewer main risk assessment and capital planning activities to enhance current rehabilitation and replacement (R&R) planning and budgeting projections for water and sewer infrastructure.

A third phase is also currently underway to update the condition and risk assessments at all of the treatment and pumping facilities and prioritize and update the four- and ten-year CIP. The custom risk tool that Arcadis developed will also be enhanced as part of the project.

## 2. Projects including Hydraulic Modeling and Conveyance System Evaluations

For 125 years, clients have relied on Arcadis to help them solve conveyance and pipeline challenges and develop cost-effective alternatives. From the development of flow monitoring plans to comprehensive regional conveyance capacity management plans, we provide affordable, single-source engineering solutions. Our hydraulic modeling and conveyance planning management services include:

- SSO abatement planning
- Infrastructure master planning
- Regulatory assistance
- Flow and rainfall monitoring
- GIS data management
- Hydraulic and hydrologic modeling
- I/I studies
- Condition assessments
- Green infrastructure planning
- Stormwater planning
- Capacity assessment
- Facility planning
- Rehabilitation of system
- Preliminary design of conveyance improvements

### Project Examples:

- Village of Islamorada, FL –Wastewater Conveyance Surge Analysis, 2015
- City of Flint, MI – Systemwide Surge Analysis, 2017
- CITGO Tallmadge Ohio Surge Evaluation, 2018
- Philadelphia Water Department – Lardner’s Point PS Surge Modeling and Design, 2018
- Northern Kentucky Water District – Surge Evaluation, 2018
- City of North Canton, OH – High Service Zone Transient Evaluation, 2015
- ExxonMobile Dakota Access Pipe Line Patoka Station Surge Evaluation, 2017
- Town of Greenburgh, NY –Pump Station and Proposed Interconnect Surge Analysis, 2018
- Paulding County, GA –Richland Creek Raw Water Supply Surge Analysis, 2017
- Massachusetts Water Resources Authority, MA –Shaft 12 Isolation Gate Valve in Quabbin Aqueduct Surge Analysis, 2017
- Henrico County, VA –Cobbs Creek Reservoir Supply Surge Analysis, 2017
- Dallas Water Utilities, TX –Elm fork Water Treatment Plant Surge Analysis, 2017
- San Antonio Water System, TX –Groundwater Pump Surge Analysis, 2016
- Westchester County, NY –Kensico-Bronx Supply & UV Disinfection Surge Analysis, 2014



*Transient modeling in Flint, Michigan identified a higher frequency of main breaks (blue circles) in areas with higher pressure transients (red and yellow pipes) due to pumping operations at the West Side Reservoir.*

Following, we present project examples of hydraulic modeling.

## ECUA: SEWER SYSTEM EVALUATION SURVEYS AND REHABILITATION PROGRAM



### CLIENT:

Stacy Hayden  
Emerald Coast Utilities Authority  
850.969.6648

### YEAR PROJECT COMPLETED:

Ongoing

### TOTAL FEES / COST:

\$7 million

### RELEVANT FEATURES

Sewer Hydraulic Model  
Development including Force  
Mains  
InfoWater Model  
Force Main Surge Analysis

### Our Role

Arcadis serves as the Program Manager for a multimillion-dollar sewer rehabilitation program for the Emerald Coast Utilities Authority (ECUA), which serves almost 300,000 people in Escambia County and the City of Pensacola. ECUA operates 857 miles of gravity sewer and three wastewater treatment plants with a total capacity of 31 million gallons per day (mgd). The ECUA sewer system exhibits significant infiltration/inflow (I/I) flows and has been severely impacted by hurricanes over the past few years. The comprehensive sewer rehabilitation program is covered by a State of Florida Department of Environmental Protection Consent Order issued in 2006 that requires ECUA to achieve substantial reductions in I/I flows within the specified compliance period.

Under the comprehensive ongoing sewer rehabilitation program Arcadis provides services that include the management, scheduling, financial forecasting, investigation, analysis and design, as well as construction phase services for the implementation of the complex multiyear effort to reduce I/I in the entire ECUA system. Smoke testing for cross connections and night-time flow measurements using v-notch weirs to evaluate groundwater infiltration was completed in September 2009. A total of 1,500 manholes have been inspected to date. CCTV investigations were completed in mid-2008, including 55 miles of CCTV work for the Pensacola Beach and Downtown South project areas. Based on the hydraulic and physical condition assessments, areas were prioritized for sewer rehabilitation projects (trenchless technologies). Based on these condition assessment efforts, the sewer rehabilitation program is being advanced to a 25-year, \$7-million-per-year program. ECUA has completed rehabilitation of sewer mains and laterals in six basins based on the SSESs performed to date.

Arcadis has developed system-wide models for ECUA's separate sanitary sewer systems, which convey wastewater to the Central and Bayou Marcus WRFs. These models were developed to comply with ECUA's consent order and to support the implementation of their CMOM program. The resulting dynamic sewer system models, which include approximately 3,000 pipes and 113 of 360 pump stations and significant manifolded force main systems, provide a planning-level tool that is currently being applied to complete the System Evaluation and Capacity Assurance Plan (SECAP) required as part of the CMOM program plan.

## CEG: WASTEWATER MODELING PROGRAM



### CLIENT:

Derek Sutton  
Citizens Energy Group  
317.927.6109

### YEAR PROJECT COMPLETED:

Ongoing

### TOTAL FEES / COST:

\$3.9 million

### RELEVANT FEATURES

Sewer Hydraulic Model  
Development and Calibration

InfoWorks

### Our Role

Arcadis' involvement to date with Citizens includes the following projects relevant to MMSD's modelling program:

- Business Case for model conversion that identified server-based InfoWorks ICM as the best long-term value for Citizens over EPA-SWMM, XP-SWMM, Mike Urban, and InfoSWMM.
- Conversion of the EPA-SWMM collection system model, EPA-SWMM river hydraulic model, and WASP water quality model to InfoWorks ICM, including real-time control and the tunnel and drop shafts. Verification of the converted InfoWorks collection system model and recalibration of the InfoWorks water quality model for dissolved oxygen and bacteria.
- Oversight of model updates and applications made by Citizens' modeling staff. Development of modeling guidance and checklists. Multiple Arcadis staff embedded at Citizens' office including Chris Ranck and Sarah Walsh.
- Enhancements to Citizens' collection system GIS for model linkage including the development of scripts for automated QA/QC of the sewer network, oversight of GIS edits made by Citizens' technicians, and population of as-built data.
- Expansion of the collection system model to incorporate all sewers 12" and larger, with a change in model hydrology to isolate sources of inflow and infiltration (I/I) with I/I represented as groundwater for improved accuracy in all seasons year.
- Hydraulic evaluations of the DigIndy combined sewer tunnel system that is currently in implementation, including operational planning, surge analysis, and air movement analysis.

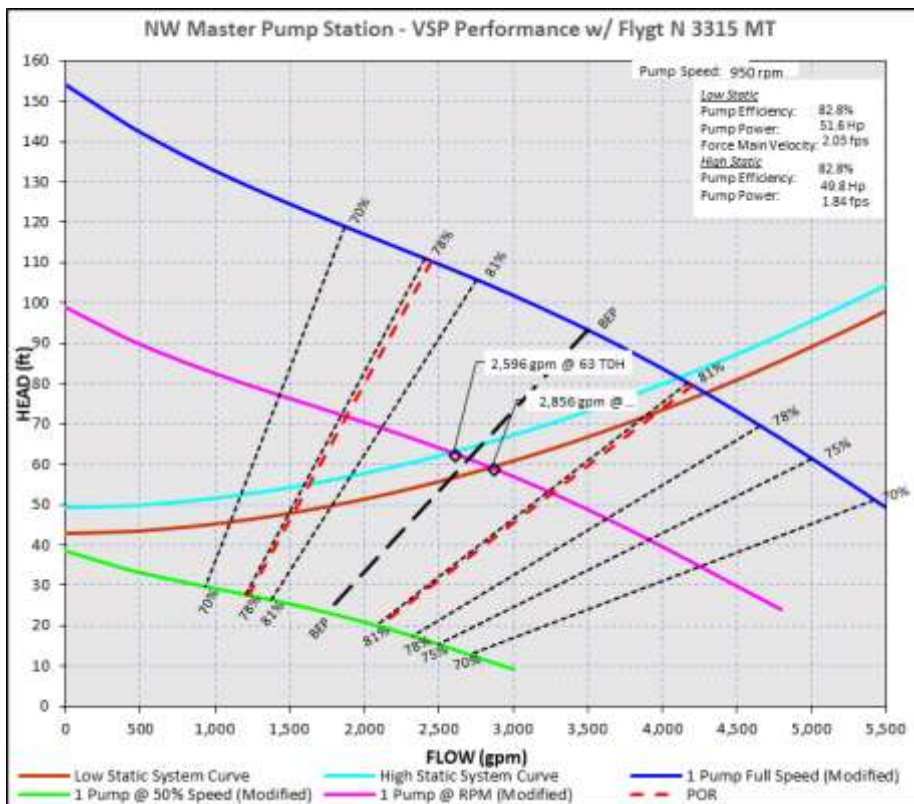
The converted and re-calibrated InfoWorks ICM model is housed on Citizens' GIS and modeling server, with all simulations performed on the server. Citizens has seen the investment pay for itself through significantly better runtimes, and data management through InfoWorks' version control and scenario management. For more information on the model expansion and I/I source isolation approach – the paper *The Only Constant is Change: A Better Collection System Model for Capital Savings* (Sutton et. al, 2017) is in the 2017 WEFTEC proceedings.

### 3. Projects including Design, Permitting and Construction Management for Wastewater Pump Stations with Split Case Horizontal Centrifugal Pumps

Eckler has been providing engineering services for projects within fully developed areas in various cities or to make improvements to existing supply, treatment, storage, distribution/collection systems and pumping facilities, including in-line pump stations, local to South Florida. Their focus is on the rehabilitation and expansion of utility systems in order to meet growth requirements and renewal/replacement requirements due to system age.

Eckler Engineering is currently, or has provided, general water and wastewater consulting services to the City of Coral Springs, the

Village of Palm Springs, the City of Pompano Beach, the City of Sunrise, the Town of Hillsboro Beach, the Town of Highland Beach, the City of Tamarac, the City of Margate, the City of Coconut Creek, the City of North Lauderdale, the City of Lauderdale, South Broward Utilities, the City of Plantation, and the Seminole Tribe of Florida. This shows a strong relationship to how this CBE subconsultant brings essential knowledge and value to the project team. Eckler Engineering has also served as a subconsultant to many other engineering firms offering our expertise in vacuum sewer collection systems, and reclaimed water systems. Many different projects have been completed for these clients.



Arcadis and Eckler collectively have experience in the design of numerous in-line booster wastewater pump stations in south Florida, although the experience is beyond the five-year time frame for this proposal. Arcadis at the final design phase of a project that consists of a booster pump stations with split case horizontal centrifugal pumps for the City of Sunrise that provides the hydraulics to convey 6 MGD of Biscayne Aquifer water into two Floridan wells that are being utilized as Aquifer Storage and Recovery (ASR). Eckler Engineering has hands on experience inside several of the Regional Master pump stations that were converted to in-line booster pump stations. This conversion of the Counties' Regional Wastewater transmissions system was partially facilitated by the Arcadis national pump technical leader, in years past. This team brings the experience of three engineers, with over eight decades of first hand design experience that involves in-line waste water booster pump stations.

Following, we present project examples of in-line pump station experience.

## SAWGRASS AQUIFER STORAGE AND RECOVERY WELL SYSTEM DESIGN



### CLIENT:

Timothy Welch, PE  
Utilities Director  
City of Sunrise  
954.888.6055

### YEAR PROJECT

#### COMPLETED:

August 2016 - Ongoing

### TOTAL FEES / COST:

\$405,183 To-Date

### RELEVANT FEATURES

Split-Case Horizontal Centrifuge  
Pumps under 100 hp

### Our Role

The City retained Arcadis to prepare a feasibility study for the conversion of the test wells to ASR use. The City can utilize raw groundwater recharge during the low-demand rainy season and recovery during the high-demand dry season to balance maximum-month or daily raw water use below the wellfields' limitations in the City's District permit. The City of Sunrise has retained Arcadis for the conversion of an existing Floridan Aquifer test well near the Sawgrass Utility Complex to an aquifer storage and recovery (ASR) well. The project involves permitting through FDEP UIC Section and Broward County and design of wellhead appurtenances; pressure, flow and water quality monitoring equipment; monitor wells; recharge and recovery pipeline, connection of wellfield raw water pipeline with a booster pump station and recovery well pipeline; bi-directional conveyance facilities and, provisions for future expansion of the ASR system (conversion of a second existing Floridan Aquifer test well to ASR use). The UIC permit is in review and 90-percent designs are complete.



## **4. Projects including Design, Permitting and Construction Management for Wastewater Pump Stations with Submersible Pumps**

For large pump station projects, Arcadis has designed temporary bypass pump stations to allow for the complete bypassing of a facility for an extended period of time. One such project is the Friars Branch Pump Station Improvements project owned by the City of Chattanooga, TN. To upgrade the existing station from 25 MGD to 108 MGD in capacity, Arcadis designed a temporary pump station adjacent to the existing structure utilizing a steel frame supporting sealed shipping containers which acted as a submersible wet well. Submersible pumps were installed inside of the shipping container structure shown below. Pump motors were powered by hydraulic power packs at grade. The entire temporary pump station was installed in a flood zone of a nearby creek and continued to operate during flooding conditions.

Following, we present project examples of submersible pump experience.

## ORCHARD KNOB PUMP STATION IMPROVEMENTS



### CLIENT:

John Lyons  
City of Chattanooga  
423.643.7106

### YEAR PROJECT

COMPLETED:  
2017

### TOTAL FEES / COST:

\$652,517

### RELEVANT FEATURES

Design and Construction  
Management of Submersible  
Pump Station, under 100 hp  
Design and Construction  
Management of Split-Case  
Pump Station Under 100 hp

### Our Role

Arcadis provided detailed design, bidding, survey, SRF assistance and geotechnical services and is currently providing construction administration and RPR services for improvements of the Orchard Knob Wastewater Pump Station, owned by the City of Chattanooga (City).

After almost four decades of operation, the pump station was nearing the end of its useful service life. Thus, the City's objective was to construct improvements to increase the pump station's reliability and efficiency and to extend its useful service life. The station configuration was designed for two pumps to operate at peak flows with a third spare or redundant pump to be used during maintenance or emergency operations. There is limited information available on the existing pumps but the City has documentation that indicates that the pumps are rated for 5,200 gallons per minute (gpm) at 47 feet of head. Prior to construction, the station was routinely required to operate above its firm capacity of 15 MGD, which places liability on the City. During typical daily pumping conditions, it is estimated that half of the flow entering the Pump Station is infiltration.

Based on a weighted cost/non-cost evaluation, installation of a new submersible pump station on the current site of the existing pump station was recommended. In sizing the new Pump Station, several factors were considered, including existing firm capacity, service area population change, and existing infrastructure. The service area population was determined to be contracting or at least stabilizing (i.e., no growth was expected in the planning horizon), therefore increasing the capacity was deemed to be unnecessary. The Pump Station had a relief sewer that could pass the lower frequency peak wet weather flows (>15 MGD) to the downstream system until I/I reduction measures are addressed.

On this basis, Arcadis recommended the pump station capacity remain at its current capacity of 15 MGD with the capability to redirect excess flows to a relief sewer.

This project is currently under construction

## ISLAMORADA: WASTEWATER COLLECTION AND TRANSMISSION SYSTEM DBO PROJECT



### CLIENT:

Richard Holt, PE  
Senior Project Manager  
Village of Islamorada  
c/o Layne Heavy Civil  
770.969.4040

### YEAR PROJECT

**COMPLETED:**  
2013

### TOTAL FEES / COST:

\$8.6 million

### RELEVANT FEATURES

Design and Construction  
Management of Submersible  
Pump Station, under 100 hp  
Design and Construction  
Management of Split Case  
Pump Station, under 100 hp

### Our Role

In 2010, the State of Florida passed a law requiring that by December 2015, all wastewater generated in the Village must be collected and conveyed to a central location for treatment and disposal. This mandate was made in an effort to eliminate unpermitted and noncompliant wastewater effluent from entering the pristine coastal waters surrounding the Village. To accomplish this, hybrid collection systems on four keys are required to serve the ultimate population of 20,000 and to connect 75 existing package plant facilities within the Village. The collected wastewater is conveyed via 26-mile conveyance force main through an extremely congested corridor along U.S. 1/Overseas Highway through the Village and Key Largo to the Key Largo Water Treatment District's Regional Treatment Plant. Force main routing and construction through the corridor is made difficult by busy traffic conditions and pending Florida DOT paving projects on U.S. 1, numerous utilities in the U.S. 1 right-of-way, environmental concerns with protected trees and wetlands, and requirements for subaqueous construction of more 9,000 linear feet below the highly-protected channels between keys. In addition, because the project is being executed as design-build, the schedule demands are extreme and close coordination of all aspects of the project must be concurrent.

To deliver this complex project in a design-build environment, careful planning of more than 150 project deliverables was completed. Design and permit packages have been coordinated with the construction schedule to ensure project completion by December 2015. Key factors considered integral to Arcaids' ability to deliver the project for the Village and Layne Heavy Civil include:

- Aggressive scheduling of survey work and use of aerial imagery and existing Florida DOT corridor mapping and utility data to quickly establish force main routing within the U.S. 1 right-of-way
- Extensive coordination with utility owners in the keys, in particular the Florida Keys Aqueduct Authority and Florida Keys Electric Cooperative, to locate existing utilities and avoid conflicts
- Close coordination with the Florida DOT and Florida DEP to establish permit requirements early and develop a streamlined approach to obtaining the necessary permits for construction
- Rigorous attention to detail in establishing permit requirements and coordinating actual construction activities for U.S. Army Corps of Engineer's permitting of 9,000 LF of subaqueous crossings for 7 different channel sections
- Employing trenchless construction methods on land to avoid impacts to sensitive environmental areas and landscaping, preventing delays in permitting and to the project schedule

- Daily coordination with Layne Heavy Civil regarding construction techniques and procedures such that the permitted and approved designs aligned with actual field activities while maintaining the functional integrity of the system
- • Continual review of construction photographs and data to identify areas for improvement and confirm that the design is being implemented in the field per the intent

As a result of our comprehensive approach, construction activities began within 4 months of the project NTP, allowing work to be completed ahead of Florida DOT paving projects. This saved the project team significant cost for repaving. Construction continues to progress and is on target for completion in December 2015.

### Key Project Elements

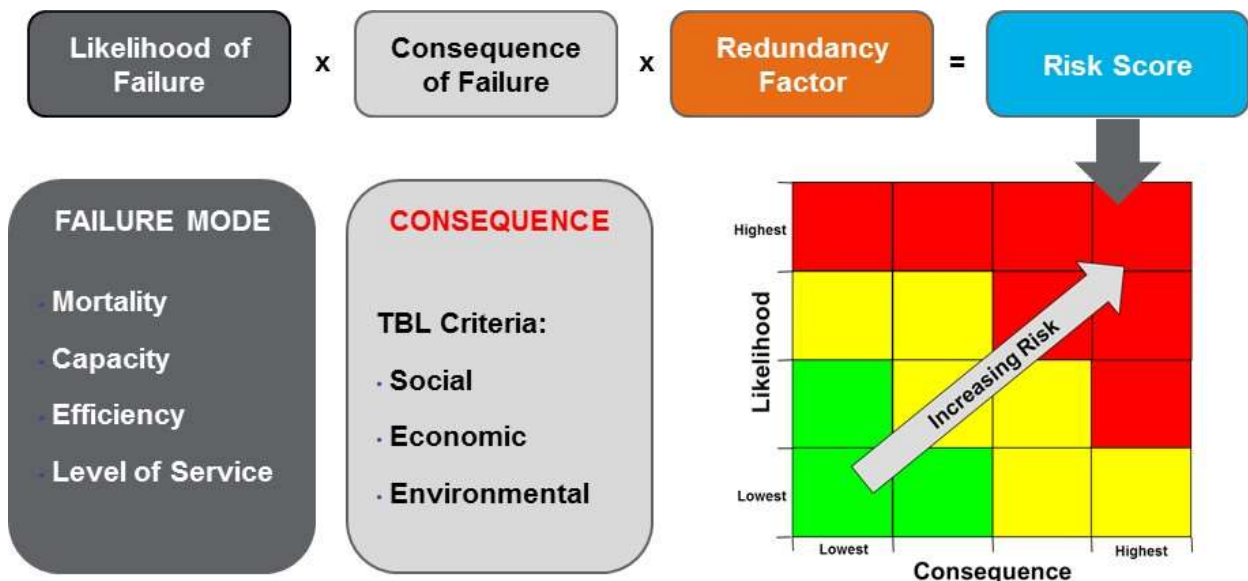
- Design/Build/Operate of a \$100 million, 4 mgd peak-flow wastewater system
- Hybrid collection consisting of low-pressure grinder and vacuum-type systems on four separate keys serving an ultimate population of 20,000 people and 75 existing package wastewater treatment facilities
- 8"-18", 26-mile transmission force main connecting the Village collection systems to the Key Largo Regional Treatment Plant
- 9,000 LF of subaqueous installation below by horizontal directional drilling
- 15,000 LF of horizontal directional drill to avoid impacts to U.S. 1, Florida Heritage Trail, and environmentally sensitive areas
- 2-mgd in-line booster pump station and conversion of an existing wastewater treatment plant in to a 4 mgd submersible-type re-pump station with wet well
- Permitting with U.S. Army Corps of Engineers, Florida DEP, Florida DOT, and other local agencies

## 5. Projects including Design, Condition Surveys and Capital Planning for Rehabilitation of Wastewater Pump Stations

Arcadis brings unmatched experience assessing and evaluating wastewater infrastructure across the Country from our over 15 years of experience. Our team members have provided these services to a wide range of municipal clients on varying sizes of pump stations including smaller submersible duplex and triplex stations and larger above ground master stations in the South and very large transmission system pumping stations located in the Northeast portion of the Country. The majority of this assessment work has been at the forefront of developing strong and sustainable condition assessment programs that have resulted in successful risk based prioritized Capital Programs, with the largest program performed for New York City DEP including all pipeline, treatment and lift station assets to produce an initial updated 6 and 10 year CIP over the last 10 years. This level of experience allows for project efficiencies and assures that Broward County will benefit from selecting the right projects for the Master Plan, incorporating growth as well as aging infrastructure drivers. Our experience has also included multiple lift station condition assessments covering:

- 300 Lift Stations for Toho Water Authority, Kissimmee, FL
- 500 Lift Stations for Lee County Utilities, Lee County, FL
- 150 Lift Stations for New York City Department of Environmental Protection, New York, NY
- 130 Lift Stations for Sugar Land, TX
- 100 Lift Stations for Cincinnati Metropolitan Sewer District, Cincinnati, OH

Our lift station condition assessments are based upon comprehensive asset management best practices as documented by the International Infrastructure Management Manual (IIMM) and the Water Environment Research Foundation (WERF) Asset Management Framework and include evaluating all potential failure modes for asset condition including physical and performance, as shown in the table below, assessing the consequence of failure, and calculating a risk score for each asset to determine its appropriate renewal or replacement timeframe. Risk calculations are in alignment with the desktop pipeline evaluation methodology shown in the figure below so that future needs can be compared.



**Lift Station Failure Modes**

Condition Type	Failure Mode	Description	Assessment Method
Physical	Mortality	Current state of repair and operation as influenced by age, historical maintenance and operating environment	Visual, Test
Performance	Capacity	Does not meet demand (flow, loading, storage volume, etc.)	Desktop, Modeling, Test
	Level-of-Service	Does not meet functional needs (regulatory, customer requirements, resilience)	Desktop
	Efficiency	Not lowest cost alternative (chemicals, power, labor, reliability, parts availability)	Desktop

Due to our extensive experience, Arcadis has an existing library of tools and templates that can be applied to the lift station assessment including specific forms for visual physical condition assessment specifying criteria and scoring for the multi-discipline team of mechanical, electrical, structural and HVAC engineers to and apply to consistently rank the assets on an industry standard scale from the IIMM of 1 (excellent) to 5 (very poor). Using a consistent ranking for assets is key to effectively comparing assets against each other and have a repeatable process for future assessments.

Adopting this Industry standard scoring also aligns with the Sewer Pipeline Assessment Certification Program (PACP) 1 to 5 scoring system.

Due to our unmatched past experience, Arcadis also offers innovative tools to streamline the collection and evaluation of condition and risk assessment data saving time and money. The two main tools we utilize include Asset Hound and the GIS ESRI based Renewal and Replacement Planning System as already described in experience section A.

The second tool is the Arcadis AssetHound application which is a mobile phone/tablet application designed specifically to collect data for condition assessment, eliminating the bottleneck of asset data collection. The existing asset inventory and key attributes from Maximo can be uploaded into the tablet as a starting point for the condition assessment so that the data is edited and not started from scratch. The condition assessment templates are also programmed in with drop down menus for the criteria and scores associated with each discipline specific evaluation. By creating an asset list and worksheet template tailored for your project, Arcadis experts are able to quickly and accurately load information on a mobile device. This eliminates the need for a two-step data entry process (field and office), provides an accurate checklist of assets against a master list, and maintains consistent data categories and organization. Past projects have shown a 40% time savings when using this approach. Lee County Utilities and Toho Water Authority in Florida were the first to pilot this new data collection system back in 2010.

**ASSETHOUND**



Following, we present project examples of condition assessment projects.

## SUGAR LAND PIPELINE AND LIFT STATION REPLACEMENT PLANNING



### CLIENT:

Brian Butscher, PE  
Project Manager  
City of Sugar Land  
281.275.2456

### YEAR PROJECT COMPLETED:

November 2016 - Ongoing

### TOTAL FEES / COST: \$495,000

### RELEVANT FEATURES

Pipeline Risk Based Planning  
Pump Station Condition and Risk  
Assessment  
Service Levels  
Capital Program Development

### Our Role

Arcadis was selected by the City of Sugar Land to create a short and long term water main replacement plan using asset management best practices. The criteria for evaluating pipeline condition and risk was created through a series on interactive workshops with the City. The final plan was prioritized based upon risk and desired service levels and was efficiently created inside of ESRI GIS. The key tasks in the project included:

- **Data Evaluation and Characterization:** The existing pipe attributes and work order failure history were evaluated and any gaps were filled to complete the risk based analysis.
- **Consequence of Failure Evaluation:** Criteria and scoring for social, financial, and environmental impacts were established and evaluated through GIS queries.
- **Condition Evaluation:** Existing pipe failure data was analyzed to establish pipe cohorts or pipes with similar behavior and a scoring criteria was established based upon the desired service level.
- **Service Levels Development:** The current breaks per 100 miles per year was evaluated for the last 20 years looking at a 3 year rolling average to understand current service levels, compare them to AWWA benchmarks and set a target break rate to define end of pipe life.
- **Renewal & Replacement Alternate Technologies and Unit Costs:** To support funding needs, a variety of options and costs were evaluated. Replacement costs were selected and calculated for each diameter range.
- **GIS Planning Tool Configuration:** The Arcadis ESRI-based Replacement Planning Tool was configured to support importing the pipe attributes, calculate Consequence of Failure Condition and Risk Scores and apply service levels and replacement unit costs to create near term project needs and future funding scenarios.
- **Short-Term Project Needs Identification:** Projects with current poor condition and high risk were identified for near term replacement.
- **Long Term Funding Requirements:** Scenarios were run using the Tool to look at 50 year funding needs based on maintaining current service levels and ramping up over time
- **Inspection Planning for Piloting Field Tools:** Higher consequence of failure AC pipelines were identified as potential candidates for field condition assessment pilots including Echologics wall integrity testing.
- **Tool Transfer and Staff Training:** Arcadis provided the Replacement Planning Tool, a Users Manual, and staff training so the City could continue planning each year.

## TOHO ASSET MANAGEMENT PROGRAM IMPLEMENTATION

**CLIENT:**

Tim Noyes  
Toho Water Authority  
407.944.5040

**YEAR PROJECT  
COMPLETED:**

2014

**TOTAL FEES / COST:**

\$325,454

**RELEVANT FEATURES**

Pipeline Risk Based Planning  
Pump Station Condition and Risk  
Assessment  
Service Levels  
Capital Program Development

**Our Role**

Arcadis assisted the Toho Water Authority (TWA) for over five years with the implementation of an asset management program. The work included a review of the overall asset management strategy as well as a thorough assessment of the Authority's software support capabilities. The Arcadis team recommended and supported phased steps to move forward towards best practices. The largest single task related to this project has been condition, criticality and risk assessments of TWA's water, wastewater and reuse assets. Task orders have included the following:

- Modifications for TWA's asset definitions attributes and hierarchy.
- Development of new performance measures
- Development of a Guidelines Document to define condition, criticality and risk scoring and decision making.
- Reconfiguration of Infor EAM CMMS to accept condition assessment data, in addition to providing a user-friendly dashboard tool.
- Development of Guidelines Document for Capital Improvement Program prioritization process including business cases
- Performance of Condition Criticality and Risk Assessments for TWA's major assets including six water treatment facilities, six wastewater treatment facilities, and 300 pumping stations to-date. The assessments include, remaining useful life and replacement cost estimates for the assets to assist in creating the 5-year capital improvement program projects and with long-term renewal and replacement planning.
- Piloting of AssetHound™ program to collect field inventory and condition asset data. Arcadis has developed an application for the Samsung Galaxy tablet that collects asset attribute data from the field into the tablet and downloads it into electronic formats that can be uploaded into clients existing asset management systems. This eliminates paper forms and data entry. 125 pumping stations were successfully piloted with this technology when it was first created in addition to training TWA staff for future use
- Support with short-term CIP development for each facility as well as a 30-year needs projection based on risk and remaining useful life.
- Energy audits at three of the largest wastewater treatment plants to evaluate asset condition vs. current efficiency and future life cycle costs.





**Professional Engineering Services for  
Regional Transmission System Master Plan**  
Bid Number: PNC2116651P1

## 4. WORKLOAD OF THE FIRM



4. WORKLOAD OF THE FIRM

## 4 WORKLOAD OF THE FIRM

The staff resources available in our local and regional offices provide significant “bench strength” that facilitates required resource allocations to meet the County’s needs. Our South Florida offices (Plantation, Boynton Beach and Miami) include more than 50 professionals to cover the potential services described in this Solicitation. And we have more than 350 additional professionals located throughout Florida, if needed. Key project personnel are available to initiate the work immediately upon contract execution and to continue work on an ongoing basis. Furthermore, we commit to provide other resources as needed to supplement the proposed team to meet the County’s needs. **Our Project Manager, Mr. Chris Barlow, PE will be responsible for scheduling and committing team resources to the project and incorporating additional staff, as-needed.**

The timely and successful completion of projects is our highest priority. We perform workload evaluations on a regular basis so that adequate staffing resources are available for each new assignment undertaken by the firm. Arcadis has built and implemented a project staffing tool that allows project managers to leverage our staff and make sure the right person is assigned to each task. This tool is fully integrated with our project management system and

our online database of staff resumes and skill profiles. The functions of this tool aids in the initial staffing of projects, as well as making crucial staffing changes to accommodate the needs of our clients and the changing demands of managing multiple projects simultaneously. This tool also enables us to predict, prevent and amend potential shortfall in staffing resources.

Based on a recent workload evaluation, Arcadis’ committed staffing resources are below our projected capacity for the next 12 months. **Our availability is more than sufficient to meet the County’s staffing requirements for this contract and will allow us to deliver quality projects on schedule and within budget.** In addition, our subconsultants have also evaluated their current and planned workloads, and can dedicate the necessary time to work on their assigned tasks with the identical thoroughness and quality our clients have come to expect from us.

The table below summarizes the workload for our team leaders in each area including their current work assignments, the typical number of projects handled by the team member, and projected workload activities.

Key Team Member / Role	Current Work Listing	Typical No. of Projects Handled at Any Given Time	Projected Workload of Project Management Activities as Defined in SOW
Chris Barlow, PE / Project Manager / Master Pump Station Assessments	City of Sunrise Miscellaneous Utility Improvement Projects, City Hollywood High Service Pump Improvements, Miami-Dade WASD Bond Engineering Services	4-6	30%
Leah Torres, PE / Project Officer / Comprehensive Capital Master Plan / Emergency Response Plan	Miami Dade WASD Bond Engineering Services, Broward County Solid Waste & Recycling Study, PortMiami Bond Engineering Services, City of Sunrise Miscellaneous Utility Improvement Projects, QA/QC and general project oversight for a number of projects within the State of Florida and clients therein	10-15	10%
Hazem Gheith, PhD, PE / Quality	York Stormwater Pilot, Columbus Sunrise/Glenn Hydraulic Modeling and GI, Columbus Collection System Modeling, Columbus Lower Olenatany Tunnel Modeling, Columbus Blueprint Summit Area Technical Consulting, Satellite Stormwater Management Model	7-9	10%

Broward County Regional Transmission System Master Plan

Bid Number: PNC2116651P1

Key Team Member / Role	Current Work Listing	Typical No. of Projects Handled at Any Given Time	Projected Workload of Project Management Activities as Defined in SOW
<b>Jim Cooper, PE, ENV SP, CWO / Modeling Technical Lead</b>	Akron CSO Sampling, AWWA Assesment of Perf Indicators, South Bend Water Distribution Modeling, Hudson, OH Water Disribution Model and Emergency Plan Update, LADWP Water Distribution Hydraulic Models, Chesterfield Heights Water and Sanitary Replacement	5-7	20%
<b>Greg Osthues, PE / Condition and Risk Assessment Technical Lead</b>	JEA Large Diameter Pipe Evaluation Program, Asset management and capital program development for NYC DEP (New York, NY); Miami-Dade WASD; Indian River County, FL; Hartford MDC (Hartford, CT); City of Phoenix, AZ	5-7	20%
<b>Celine Hyer, PE / Prioritization and Capital Planning Technical Lead</b>	Indian River County Asset Management Program, NYCDEP Asset Management Program, WASD Bond Engineering Contract, Sugar Land TX Lift Station Replacement Planning, Oceanside CA Force Main Condition Assessment	6-8	20%
<b>Freddy Betancourt, PE / Emergency Response Plan Technical Lead</b>	Indian River Asset Management Program, ECUA 2018 Management Audit, College Park Neighborhood Potable Water R&R, Hillborough County Integrated Water Reuse Program, Orlando Utilities Commission SR-482 Planning	5-7	20%



**Professional Engineering Services for  
Regional Transmission System Master Plan**  
Bid Number: PNC2116651P1

## 5. FIRM'S LOCATION



## 5 FIRM'S LOCATION

Arcadis has a long history of being the preferred consultant to many of the nation's largest municipalities. We have more than 4,900 personnel located in the United States across 130 offices. We have provided engineering and consulting services to thousands of public and private sector clients and their communities for more than 125 years. Arcadis maintains an office in Plantation, FL, located within the heart of Broward County. This allows us to respond quickly to any requests or meetings with the County or any associated stakeholder groups. With the location of our Plantation office, we are able to have staff on-site within 20 minutes of receiving a call.

Our Project Manager, Mr. Chris Barlow, PE, will be leading this project from our Plantation office, and will be supported by a substantial team also located in offices in Plantation, Boynton Beach, Miami and Tampa (FL).

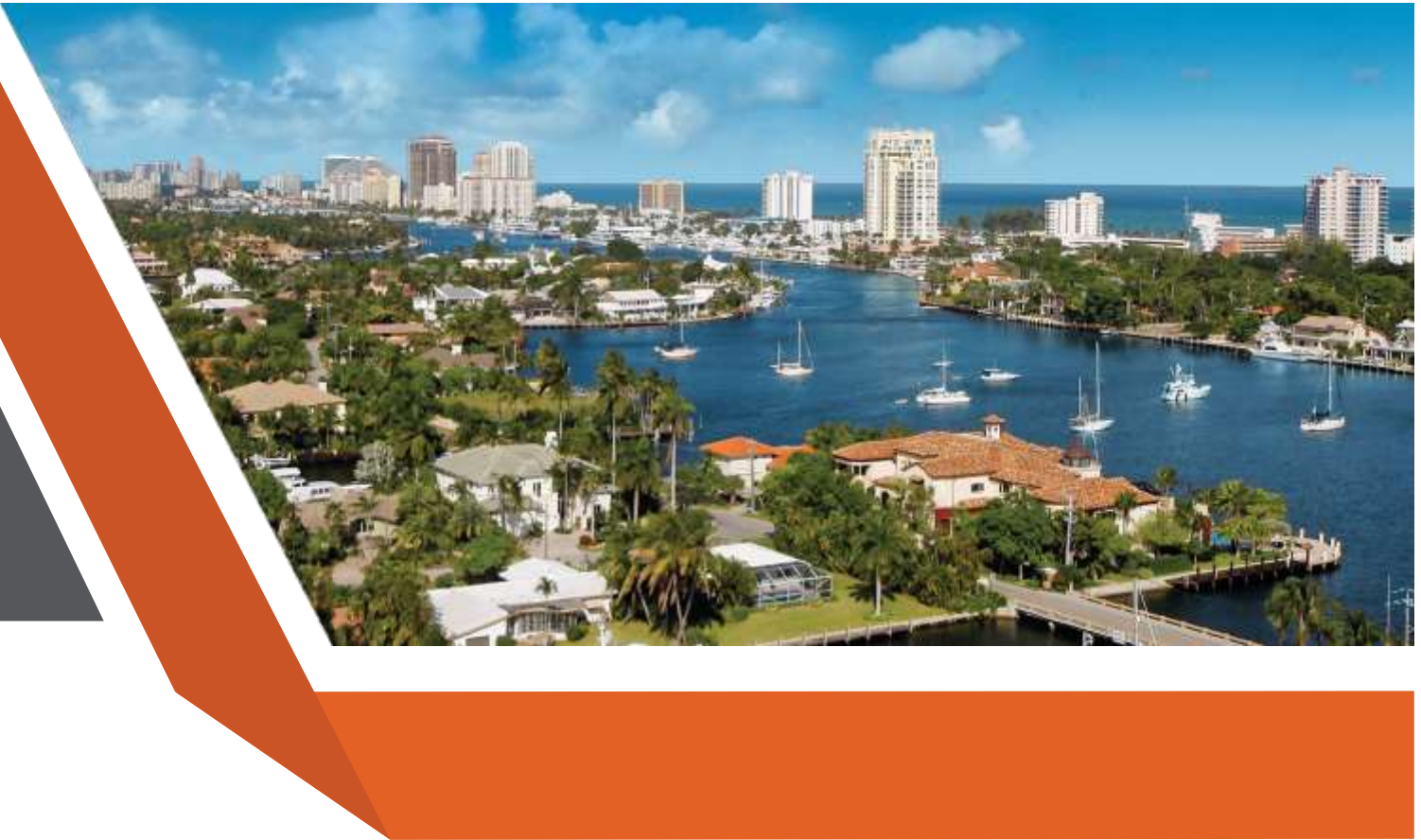




**Professional Engineering Services for  
Regional Transmission System Master Plan**  
Bid Number: PNC2116651P1

# 6. WILLINGNESS TO MEET TIME AND BUDGET

6. WILLINGNESS TO MEET  
TIME & BUDGET



## 6 WILLINGNESS TO MEET TIME AND BUDGET

The Arcadis Team has a proven record of completing projects on or ahead of schedule and within budget. Our understanding of scheduling and budget requirements as well as overall procedures, preferences and standards has been acquired and perfected over our long history working with municipal clients on critical projects. The following subsections highlight key components of each project, that our team implements, and it outlines our approach to ensuring success for each project, a method which will allow us to commit to meeting the established project's completion date requirement within the established project budget. These key components include the following:

- **Clear Expectations for Scope, Schedule and Budget**
- **Project Controls to Maintain Project Schedule and Budget**

- **Assignment of Personnel to Effectively Handle All Tasks and Maximize Efficiency**
- **Clear Expectations for Scope, Schedule and Budget**

Our team's management approach is focused on partnering, communication and evaluation of the most cost-effective project alternatives that will meet the established project timeline. **We strongly believe in collaborating and maintaining effective communication within our project teams, with our subconsultants, and also between our team and the client. All of the key project decisions will be made jointly with the County.**

### Resource-Loaded Schedule

Task and staffing assignments will be made through development of a resource-loaded schedule, which is an effective way to identify and eliminate risks



during the early stages when they can be corrected with minimal impact. This schedule provides a detailed forecast of the staffing requirements for the project, and allows time to plan for key personnel to be available when required. Efforts can then be made early in the planning phase to level the resources in the schedule to eliminate the risk of schedule slippage and increase efficiency (i.e., eliminating the chance that critical staff are unable to complete all the tasks required of them due to overloading).

### Project Controls to Maintain Work Authorization Schedule and Budget

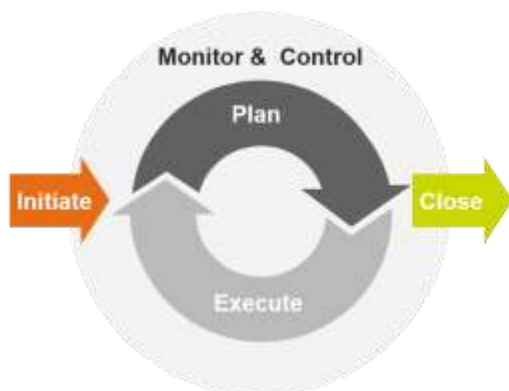
Project cost management includes initial cost estimating and baseline budget development as the project scope and schedule are defined, followed by continued cost monitoring and control during project execution. During project initiation, as the scope, schedule and resource requirements are developed, Mr. Barlow will guide the project team in developing a project scope that is tailored to fit both the County’s quality and budget goals. Once this planning is complete and a baseline has been established, Mr. Barlow will monitor scope, cost and schedule compliance on a weekly basis. Weekly reports document expenditures to date, estimates to complete, estimates at completion and activity progress. These reports can also assess the “actuals” and estimates against the initially proposed budget and schedule to evaluate schedule variance, cost

variance, schedule performance index and cost performance index at both the individual task level and the overall project level.

In addition to the Project Controls discussed in Section 2 to maintain project schedule and budget the Arcadis Team will include a schedule update with every invoice. This allows the County to track progress on both production and financials, providing a peace of mind that the project is being delivered under the agreed budget within the assigned timeframe. It also provides the opportunity to identify tasks where necessary corrective actions are required.

### Assignment of Personnel to Effectively Handle All Tasks and Maximize Efficiency

In identifying our proposed team for each work authorization, our goal is to provide a uniquely qualified team that includes primarily local staff with a history of working together on similar municipal projects throughout Florida. Our locally experienced and knowledgeable team maximizes our project delivery efficiency and optimizes each assigned work tasks.







**Professional Engineering Services for  
Regional Transmission System Master Plan**  
Bid Number: PNC2116651P1

## 7. REQUIRED FORMS AND SUPPORTING CONTENT



7. REQUIRED FORMS &  
SUPPORTING CONTENT

# 7 REQUIRED FORMS AND SUPPORTING CONTENT

## Included in Bid Offer

- Corporate Secretary Signature Authority
- Arcadis U.S., Inc. State of Florida Authority to Do Business
- Arcadis U.S., Inc. State of Florida Engineering Firm License
- Arcadis U.S., Inc. Broward County Local Business Tax Receipt
- Arcadis U.S., Inc. City of Plantation Local Business Tax Receipt
- Vendor Reference Verification Forms
- Subcontractors/Subconsultants/Suppliers Requirement Form
- Letters of Intent Between Bidder/Offeror and County Business Enterprise (CBE)
- Subcontractor/Supplier Forms
- Arcadis U.S., Inc. Specimen Certificate of Insurance
- Arcadis U.S., Inc. Current Litigation List

## Uploaded to Bidsync

- Standard Instructions to Vendors (Accepted)
- Vendor Questionnaire and Standard Certifications (Accepted)
- Affiliated Entities of the Principal(s) Certification Form (Accepted)
- Litigation History Form (Accepted)
- Lobbyist Registration Requirement Certification Form (Accepted)
- Agreement Exception Form (Accepted)
- Local Preference - Tiebreaker Certification Form (Accepted)
- Domestic Partnership Act Certification Form (Accepted)
- Volume of Previous Work (Accepted)
- Insurance Requirements Form (Accepted)

## Submitted Separately

- Firm Financials for Previous Two Years [Confidential, per Florida Statute 119.071(1)(c)]

## CERTIFICATE OF CORPORATE AUTHORITY

I, Aren L. Fairchild, Secretary of Arcadis U.S., Inc. (the “Company”), a Corporation organized under the laws of the State of Delaware, certify that the following is a full and correct copy of a resolution adopted at a meeting of the Board of Directors of said Company, held on the 5th day of May 2017:

RESOLVED that the Chief Executive Officer is authorized and empowered to enter into proposals for fees and other contracts and obligations and that he may delegate the authority to other officers and managers of the Company in such amounts and on such other terms as he shall determine from time to time.

AND I DO FURTHER CERTIFY that pursuant to the above resolution that contracts, amendments, and required documentation for Broward County may be signed by Leah (Richter) Torres, in her capacity as Associate Vice President of the Company.

AND I DO FURTHER CERTIFY that the above resolution has not been in any way altered, amended or repealed and is now in full force and effect.

IN WITNESS WHEREOF, I have signed this Certificate this 15<sup>th</sup> day of June, 2018.



(SEAL)

Name: Aren L. Fairchild

Title: Secretary

Arcadis U.S., Inc.

# *State of Florida*

## *Department of State*

I certify from the records of this office that ARCADIS U.S., INC. is a Delaware corporation authorized to transact business in the State of Florida, qualified on February 26, 1998.

The document number of this corporation is F98000001104.

I further certify that said corporation has paid all fees due this office through December 31, 2018, that its most recent annual report/uniform business report was filed on April 10, 2018, and that its status is active.

I further certify that said corporation has not filed a Certificate of Withdrawal.

*Given under my hand and the  
Great Seal of the State of Florida  
at Tallahassee, the Capital, this  
the Tenth day of April, 2018*



*Ken Detjmer*  
*Secretary of State*

Tracking Number: CC9965121065

To authenticate this certificate, visit the following site, enter this number, and then follow the instructions displayed.

<https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication>

# State of Florida

## Board of Professional Engineers

Attests that

**ARCADIS U.S., Inc.**



Is authorized under the provisions of Section 471.023, Florida Statutes, to offer engineering services to the public through a Professional Engineer, duly licensed under Chapter 471, Florida Statutes.

Expiration: 2/28/2019

Audit No: 228201902636 R

CA Lic. No:

7917

## BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 - 954-831-4000

**VALID OCTOBER 1, 2017 THROUGH SEPTEMBER 30, 2018**

OBA:  
Business Name: **ARCADIS US INC**

Receipt # '1pt #' 315-250191  
Business Type: **ENGINEER (ENGINEERING FIRM)**

Owner Name: **ARCADIS US INC**  
Business Location: **8201 PETERS RD STE 3400**  
**PLANTATION**  
Business Phone: **954 761 3460**

Business Opened: **03/ 2012**  
State/County /Cert/ Reg: **2282013016 53**  
Exemption Code :

Rooms                      Seats                      Emplo yees                      Machines                      Professionals  
1

For Vending Business Only						
Number of Machines:				Vending Type:		
Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
30.00	0.00	0.00	3.00	0.00 1	0.00	--:3T-

### THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS

**THIS BECOMES A TAX RECEIPT**

**WHEN VALIDATED**

This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

Mailing Address s:

ARCADIS US, INC  
110 WEST FAYETTE ST STE 300  
SYRACUSE, NY 13202

Receipt #WWW-17-00000433  
Paid 10/04/2017 33.00

2-)

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Plantation  
the grass is greener

Broward County Board of  
County Commissioners  
City of Plantation  
**LOCAL BUSINESS  
TAX CERTIFICATE**

PNC2115559P1

Certificate # 164114

Account# OC16-0030

Valid from 10/01/2017 to 09/30/2018

**THIS CERTIFICATE MUST BE  
CONSPICUOUSLY DISPLAYED**

Classification: (26)d Administration/Management Office

Business Name & Address :

Arcadis U.S., Inc.  
8201 Peters Rd #2400  
Plantation FL 33324

  
CITY CLERK SIGNATURE

NOTICE : If Business is sold this Certificate must be transferred within 10 days or it becomes null and void .



**Vendor Reference Verification Form**

Broward County Solicitation No. and Title:

RFP No. PNC2116651P1: Regional Transmission System Master Plan

Reference for: Arcadis U.S., Inc.

Organization/Firm Name providing reference: City of Sugar Land Texas

Contact Name: Robert Valenzuela, PE Title: Public Works Director Reference date:

Contact Email: rvalenzuela@sugarlandtx.gov Contact Phone: 281-275-2167

Name of Referenced Project: Sugar Land Water Main and Lift Station Risk Based Replacement Plans

Contract No. Date Services Provided: Project Amount: \$454,000  
6/2016 to on-going

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

**Description of services provided by Vendor:**

Developed and configured a risk based rehabilitation and replacement planning system that is ESRI GIS based to assist with future needs projections over the next 50 years. The system was developed, as part of our corporate asset management plan and risk structure, for our water distribution system(481 miles) and our lift stations (134 stations).

**Please rate your experience with the referenced Vendor:**

Needs Improvement Satisfactory Excellent Not Applicable

	Needs Improvement	Satisfactory	Excellent	Not Applicable
1. Vendor's Quality of Service				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Vendor's Organization:				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Timeliness of:				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Project completed within budget	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Cooperation with:				
a. Your Firm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Subcontractor(s)/Subconsultant(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Regulatory Agency(ies)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Additional Comments: (provide on additional sheet if needed)

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**Vendor Reference Verification Form**

Broward County Solicitation No. and Title:

RFP No. PNC2116651P1: Regional Transmission System Master Plan

Reference for: Arcadis U.S., Inc.

Organization/Firm Name providing reference: Toho Water Authority

Contact Name: Robert Pelham, PE Title: Director of Engineering Reference date: 7/5/18

Contact Email: rpelham@tohowater.com Contact Phone: 407-709-3677

Name of Referenced Project: Asset & Energy Management Services (including lift station condition and risk assessments)

Contract No. Date Services Provided: Project Amount: \$2,600,000  
7/2008 to 8/2015

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

**Description of services provided by Vendor:**

*Assistance in establishing Asset Mgmt program including CMMS integrative with GIS, CIP program, vertical asset assessment methodology & assistance.*

Please rate your experience with the referenced Vendor:

Needs Improvement Satisfactory Excellent Not Applicable

1. Vendor's Quality of Service

a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2. Vendor's Organization:

a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3. Timeliness of:

a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4. Project completed within budget

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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5. Cooperation with:

a. Your Firm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Subcontractor(s)/Subconsultant(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Regulatory Agency(ies)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Additional Comments: (provide on additional sheet if needed)

*Completed by Tim Noyes Asset Mgr tnoyes@tohowater.com  
407-944-5040*

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**Vendor Reference Verification Form**

Broward County Solicitation No. and Title:

RFP No. PNC2116651P1: Regional Transmission System Master Plan

Reference for: Arcadis U.S., Inc.

Organization/Firm Name providing reference:

Miami-Dade County Water and Sewer Department

Contact Name: Maria Suarez Title: Chief, Budget Reference date: 7/9/2018

Contact Email: maria.suarez@miamidade.gov Contact Phone: 786-552-8038

Name of Referenced Project: Water and Sewer Rates, Fee Analysis and Bond Engineering Services

Contract No.	Date Services Provided:	Project Amount:
16AUSi001	4/29/2016 to 4/29/2019	\$1,877,400.00

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

**Description of services provided by Vendor:**

Financial Services in accordance with Bond Ordinance, including annual bond engineer reports and condition assessments, reviews of adequacy of rates and fees, wholesale rate reviews, retail rate study, and consulting engineer's reports for bond issuances as well as misc studies and reports related to the water and sewer system.

**Please rate your experience with the referenced Vendor:**

	Needs Improvement	Satisfactory	Excellent	Not Applicable
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1. Vendor's Quality of Service				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Vendor's Organization:				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Timeliness of:				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Project completed within budget	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Cooperation with:				
a. Your Firm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Subcontractor(s)/Subconsultant(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Regulatory Agency(ies)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Additional Comments: (provide on additional sheet if needed)

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**Vendor Reference Verification Form**

Broward County Solicitation No. and Title:

RFP No. PNC2116651P1: Regional Transmission System Master Plan

Reference for: Jose Compres/ Professional Experience

Organization/Firm Name providing reference: CES Consultants, Inc

Contact Name: Ranthus B. Fouch

Title: Vice President/  
Principal Engineer

Reference date: 7/5/2017

Contact Email: rfouch@cesconsult.com

Contact Phone: 305-827-2220

Name of Referenced Project: North District Wastewater Treatment Rehabilitation Project, Miami Dade Water & Sewer Department

Contract No.

Date Services Provided: 06/2013  
to 06/2016

Project Amount:

M-10006

\$ 60,000

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

**Description of services provided by Vendor:** The NDWWTP rehabilitation project is part of the 2013 Consent Decree between Miami Dade Water and Sewer Department and Environmental Protection Agency to initiate a program to implement improvements at the plant to restore the viability of this wastewater treatment facility over the long-term.

**Please rate your experience with the referenced Vendor:**

	Needs Improvement	Satisfactory	Excellent	Not Applicable
1. Vendor's Quality of Service				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Vendor's Organization:				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Timeliness of:				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Project completed within budget	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Cooperation with:				
a. Your Firm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Subcontractor(s)/Subconsultant(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Regulatory Agency(ies)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Additional Comments: (provide on additional sheet if needed)

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**Vendor Reference Verification Form**

Broward County Solicitation No. and Title:

RFP No. PNC2116651P1: Regional Transmission System Master Plan

Reference for: Jose Compres/ Professional Experience

Organization/Firm Name providing reference: CES Consultants, Inc

Contact Name: Ranthus B. Fouch

Title: Vice President/  
Principal Engineer

Reference date: 7/5/2017

Contact Email: rfouch@cesconsult.com

Contact Phone: 305-827-2220

Name of Referenced Project: Miami-Dade County Waste Water Master Plan, Miami-Dade County Water & Sewer Department

Contract No.

Date Services Provided:

Project Amount:

*E05-WWSP-11*

*05/2007 to 12/2009*

*\$ 40,000*

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

**Description of services provided by Vendor:** The project included collecting information for all pump stations and treatment plants, including, running time, pressures, flows and other SCADA database information, Peak flow analysis for each station, infiltration studies, determination of per capita flow projections and population growth using state-of-the-art GIS software, development of a transmission and collection system, among other information needed for the initial model calibration.

**Please rate your experience with the referenced Vendor:**

Needs Improvement      Satisfactory      Excellent      Not Applicable

1. Vendor's Quality of Service

- a. Responsive  Needs Improvement  Satisfactory  Excellent  Not Applicable
- b. Accuracy  Needs Improvement  Satisfactory  Excellent  Not Applicable
- c. Deliverables  Needs Improvement  Satisfactory  Excellent  Not Applicable

2. Vendor's Organization:

- a. Staff expertise  Needs Improvement  Satisfactory  Excellent  Not Applicable
- b. Professionalism  Needs Improvement  Satisfactory  Excellent  Not Applicable
- c. Turnover  Needs Improvement  Satisfactory  Excellent  Not Applicable

3. Timeliness of:

- a. Project  Needs Improvement  Satisfactory  Excellent  Not Applicable
- b. Deliverables  Needs Improvement  Satisfactory  Excellent  Not Applicable

4. Project completed within budget

Needs Improvement  Satisfactory  Excellent  Not Applicable

5. Cooperation with:

- a. Your Firm  Needs Improvement  Satisfactory  Excellent  Not Applicable
- b. Subcontractor(s)/Subconsultant(s)  Needs Improvement  Satisfactory  Excellent  Not Applicable
- c. Regulatory Agency(ies)  Needs Improvement  Satisfactory  Excellent  Not Applicable

Additional Comments: (provide on additional sheet if needed)

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**Vendor Reference Verification Form**

Broward County Solicitation No. and Title:

RFP No. PNC2116651P1: Regional Transmission System Master Plan

Reference for: Jose Compres/ Professional Experience

Organization/Firm Name providing reference: CES Consultants, Inc

Contact Name: Ranthus B. Fouch	Title: Vice President/ Principal Engineer	Reference date: 7/5/2017
Contact Email: rfouch@cesconsult.com	Contact Phone: 305-827-2220	
Name of Referenced Project: Pump Stations Improvements, Miami-Dade County Water and Sewer Department		
Contract No. <i>M-10006</i>	Date Services Provided: 05/2015 to 04/2016	Project Amount: <i>\$30,000</i>

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

**Description of services provided by Vendor:** On March 30, 2015 the building and ancillary structures of Pump Stations were inspected to assess the existing conditions, to verify their adequacy and provide all the recommendations for their improvements. The preparation of BODR includes a description, field observations, professional opinion and all necessary upgrades for the exterior and interior of the building, and all ancillary structures related to pump station.

**Please rate your experience with the referenced Vendor:**

	Needs Improvement	Satisfactory	Excellent	Not Applicable
1. Vendor's Quality of Service				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Vendor's Organization:				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Timeliness of:				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Project completed within budget	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Cooperation with:				
a. Your Firm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Subcontractor(s)/Subconsultant(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Regulatory Agency(ies)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Additional Comments: (provide on additional sheet if needed)

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**Vendor Reference Verification Form**

Broward County Solicitation No. and Title:

RFP No. PNC2116651P1: Regional Transmission System Master Plan

Reference for: Eckler Engineering, Inc.

Organization/Firm Name providing reference:  
Okeechobee Utility Authority

Contact Name: John Hayford, P.E. Title: Executive Director Reference date: 7/9/18

Contact Email: jhayford@ouafl.com Contact Phone: 863/763-9460

Name of Referenced Project: Water Treatment Plant Improvements

Contract No. 234-004.01 Date Services Provided: 4/2017 to Present Project Amount: \$5,342,103 (estimate)

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

**Description of services provided by Vendor:** Design , permitting, bidding assistance and construction services for water treatment plant improvements.

**Please rate your experience with the referenced Vendor:**

Needs Improvement Satisfactory Excellent Not Applicable

Please rate your experience with the referenced Vendor:	Needs Improvement	Satisfactory	Excellent	Not Applicable
1. Vendor's Quality of Service			<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Vendor's Organization:			<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Turnover	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Timeliness of:			<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Project completed within budget	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Cooperation with:			<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Your Firm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Subcontractor(s)/Subconsultant(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Regulatory Agency(ies)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Additional Comments: (provide on additional sheet if needed)

Great firm to work with, would easily use them on future projects.

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**Vendor Reference Verification Form**

Broward County Solicitation No. and Title:

RFP No. PNC2116651P1: Regional Transmission System Master Plan

Reference for: Eckler Engineering, Inc.

Organization/Firm Name providing reference:

North Key Largo Utility Corporation

Contact Name: Mr. Jeffrey L. Oeltjen, P.E.

Title: Vice President

Reference date: July 9, 2018

Contact Email: joeltjen@oceanreef.com

Contact Phone: 305/367-7337

Name of Referenced Project: MBR System and RO System Improvements

Contract No.  
249-001.01

Date Services Provided:  
4/2015 to 8/2016

Project Amount:  
\$2,060,139 (construction)

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

**Description of services provided by Vendor:** Engineering services for improvements to the NKLUC Reverse Osmosis Irrigation Water Production Facility and Advanced Wastewater Treatment Plant.

**Please rate your experience with the referenced Vendor:**

Needs Improvement      Satisfactory      Excellent      Not Applicable

1. Vendor's Quality of Service				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Vendor's Organization:				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Timeliness of:				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Project completed within budget	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Cooperation with:				
a. Your Firm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Subcontractor(s)/Subconsultant(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Regulatory Agency(ies)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Additional Comments: (provide on additional sheet if needed)

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**Vendor Reference Verification Form**

Broward County Solicitation No. and Title:

RFP No. PNC2116651P1: Regional Transmission System Master Plan

Reference for: Eckler Engineering, Inc.

Organization/Firm Name providing reference:

City of Coral Springs

Contact Name: Juan Robby

Title: Asst. Dir. of Public Works Reference date: 7/9/2018

Contact Email: jrobb@coralsprings.org

Contact Phone: 954/345-2161

Name of Referenced Project: Wastewater Transmission System Modeling and Master Plan

Contract No.

275-068.00

Date Services Provided:

4/2015

to 4/2016

Project Amount:

\$73,000

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

**Description of services provided by Vendor:**

*Modeling the entire Transmission System for the City in order to determine where new force mains would be needed.*

**Please rate your experience with the referenced Vendor:**

**Needs Improvement      Satisfactory      Excellent      Not Applicable**

	Needs Improvement	Satisfactory	Excellent	Not Applicable
1. Vendor's Quality of Service				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Vendor's Organization:				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Timeliness of:				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Project completed within budget	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Cooperation with:				
a. Your Firm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Subcontractor(s)/Subconsultant(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Regulatory Agency(ies)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Additional Comments: (provide on additional sheet if needed)

\*\*\*THIS SECTION FOR COUNTY USE ONLY\*\*\*

Verified via:  EMAIL  VERBAL Verified by: \_\_\_\_\_ Division: \_\_\_\_\_ Date: \_\_\_\_\_

All information provided to Broward County is subject to verification. Vendor acknowledges that inaccurate, untruthful, or incorrect statements made in support of this response may be used by the County as a basis for rejection, rescission of the award, or termination of the contract and may also serve as the basis for debarment of Vendor pursuant to Section 21.119 of the Broward County Procurement Code.

6/29/2018 2:38 PM

p. 44





### Vendor Reference Verification Form

Broward County Solicitation No. and Title:

RFP No. PNC2116651P1: Regional Transmission System Master Plan

Reference for: Gamboa Engineers, LLC - Mario A. Gamboa, P.E.

Organization/Firm Name providing reference:

City of Pompano Beach Utilities Department

Contact Name: Phil Hyer

Title: Superintendent

Reference date: 07/05/2018

Contact Email: phil.hyer@copbfl.com

Contact Phone:

Name of Referenced Project: Water Plant Electrical Master Plan and Projects

Contract No.

Date Services Provided:

Project Amount:

2012

to 12/31/2022

Est. \$10 Mil

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

#### Description of services provided by Vendor:

Overall planning, design, specifications, bid assistance and construction management services associated with multiple phases of projects to update entire medium voltage, 480 power supply and distribution within treatment plant.

Please rate your experience with the referenced Vendor:

Needs Improvement

Satisfactory

Excellent

Not Applicable

1. Vendor's Quality of Service

- a. Responsive
- b. Accuracy
- c. Deliverables













2. Vendor's Organization:

- a. Staff expertise
- b. Professionalism
- c. Turnover













3. Timeliness of:

- a. Project
- b. Deliverables









4. Project completed within budget





5. Cooperation with:

- a. Your Firm
- b. Subcontractor(s)/Subconsultant(s)
- c. Regulatory Agency(ies)













Additional Comments: (provide on additional sheet if needed)

Attention to detail on specifications which clarified work of contractors and minimized change orders.

\*\*\*THIS SECTION FOR COUNTY USE ONLY\*\*\*

Verified via:  EMAIL  VERBAL Verified by: \_\_\_\_\_ Division: \_\_\_\_\_ Date: \_\_\_\_\_



### Vendor Reference Verification Form

Broward County Solicitation No. and Title:

RFP No. PNC2116651P1: Regional Transmission System Master Plan

Reference for: Gamboa Engineers, LLC - Mario A. Gamboa, P.E.

Organization/Firm Name providing reference:

Sarasota County Government - Public Works/Capital Projects

Contact Name: Gene Allen

Title: Project Manager

Reference date: 07/05/2018

Contact Email: goallen@scgov.net

Contact Phone: 941.861.0564

Name of Referenced Project: Central County Water Reclamation Facility Improvements & Expansion

Contract No.

Date Services Provided:

Project Amount:

Bid# 142801CS

05/16/2012 to 02/20/2018

\$ 25,000,000.00

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

#### Description of services provided by Vendor:

Gamboa Engineers has provided extensive electrical and instrumentation/control engineering design and construction services through multiple phases at our Central County WRF.

#### Please rate your experience with the referenced Vendor:

Needs Improvement

Satisfactory

Excellent

Not Applicable

1. Vendor's Quality of Service

- a. Responsive
- b. Accuracy
- c. Deliverables













2. Vendor's Organization:

- a. Staff expertise
- b. Professionalism
- c. Turnover













3. Timeliness of:

- a. Project
- b. Deliverables









4. Project completed within budget





5. Cooperation with:

- a. Your Firm
- b. Subcontractor(s)/Subconsultant(s)
- c. Regulatory Agency(ies)













#### Additional Comments: (provide on additional sheet if needed)

Gamboa Engineers, lead by Mario, has provided exceptional professional design and construction services for Sarasota County on multiple projects. His engineering professionalism and breadth of field experience surpasses most other firms in the electrical disciplines.

\*\*\*THIS SECTION FOR COUNTY USE ONLY\*\*\*

Verified via:  EMAIL  VERBAL Verified by: \_\_\_\_\_ Division: \_\_\_\_\_ Date: \_\_\_\_\_



**Vendor Reference Verification Form**

Broward County Solicitation No. and Title:

**RFP No. PNC2116651P1: Regional Transmission System Master Plan**

Reference for: [RADISE International, LC](#)

Organization/Firm Name providing reference:

[Hazen and Sawyer](#)

Contact Name: [Samuel Smith, PE](#) Title: Sen. Princip al Eng. Reference date: [01/23/2018](#)

Contact Email: [ssmith@hazenandsawyer.com](mailto:ssmith@hazenandsawyer.com) Contact Phone: [561-314-2471](#)

Name of Referenced Project: [SFWMD Pump Station G420 T urning Vane and Pump Modifications](#)

Contract No. Date Services Provided: Project Amount:

[Proj ID 100891](#) [11/01/2016](#) to [11/01/2017](#) [\\$ 1,900,000.00](#)

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

**Description of services provided by Vendor:**

[Geotechnical engineering incl. soil borings and soil analysis /recommendations.](#)

**Please rate your experience with the referenced Vendor:**

Needs Improvement Satisfactory Excellent Not Applicable

	Needs Improvement	Satisfactory	Excellent	Not Applicable
1. Vendor's Quality of Service				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Vendor's Organization:				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Timeliness of:				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Project completed within budget	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Cooperation with:				
a. Your Firm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Subcontractor(s)/Subconsultant(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Regulatory Agency(ies)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Additional Comments: (provide on additional sheet if needed)

\*\*\*THIS SECTION FOR COUNTY USE ONLY\*\*\*

Verified via: \_\_\_\_\_ EMAIL \_\_\_\_\_ VERBAL Verified by: \_\_\_\_\_ Division: \_\_\_\_\_ Date: \_\_\_\_\_



**Vendor Reference Verification Form**

Broward County Solicitation No. and Title:

**RFP No. PNC2116651P1: Regional Transmission System Master Plan**

Reference for: **RADISE International, LC**

Organization/Firm Name providing reference:

**Hazen and Sawyer**

Contact Name: **Samuel Smith, PE** Title: **Sen. Principal Eng.** Reference date: **01/23/2018**

Contact Email: **ssmith@hazenandsawyer.com** Contact Phone: **561-314-2471**

Name of Referenced Project: **SFWMD Pump Station G420 Turning Vane and Pump Modifications**

Contract No. Date Services Provided: Project Amount:

**Proj ID 100891 11/01/2016 to 11/01/2017 \$ 1,900,000.00**

Vendor's role in Project:  Prime Vendor  Subconsultant/Subcontractor

Would you use this vendor again?  Yes  No If No, please specify in Additional Comments (below).

**Description of services provided by Vendor:**

**Geotechnical engineering incl. soil borings and soil analysis /recommendations.**

**Please rate your experience with the referenced Vendor:**

**Needs Improvement Satisfactory Excellent Not Applicable**

1. Vendor's Quality of Service				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Vendor's Organization:				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Timeliness of:				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Project completed within budget	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Cooperation with:				
a. Your Firm	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Subcontractor(s)/Subconsultant(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Regulatory Agency(ies)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Additional Comments:** (provide on additional sheet if needed)

\*\*\*THIS SECTION FOR COUNTY USE ONLY\*\*\*

Verified via: \_\_\_\_\_ EMAIL \_\_\_\_\_ VERBAL Verified by: \_\_\_\_\_ Division: \_\_\_\_\_ Date: \_\_\_\_\_

## SUBCONTRACTORS/SUBCONSULTANTS/SUPPLIERS REQUIREMENT FORM

### Request for Proposals, Request for Qualifications, or Request for Letters of Interest

The following forms and supporting information (if applicable) should be returned with Vendor's submittal. If not provided with submittal, the Vendor must submit within three business days of County's request. Failure to timely submit may affect Vendor's evaluation.

- A. The Vendor shall submit a listing of all subcontractors, subconsultants and major material suppliers (firms), if any, and the portion of the contract they will perform. A major material supplier is considered any firm that provides construction material for construction contracts, or commodities for service contracts in excess of \$50,000, to the Vendor.
- B. If participation goals apply to the contract, only non-certified firms shall be identified on the form. A non-certified firm is a firm that is not listed as a firm for attainment of participation goals (ex. County Business Enterprise or Disadvantaged Business Enterprise), if applicable to the solicitation.
- C. This list shall be kept up -to-date for the duration of the contract. If subcontractors, subconsultants or suppliers are stated, this does not relieve the Vendor from the prime responsibility of full and complete satisfactory performance under any awarded contract.
- D. After completion of the contract/final payment, the Vendor shall certify the final list of non-certified subcontractors, subconsultants, and suppliers that performed or provided services to the County for the referenced contract.
- E. The Vendor has confirmed that none of the recommended subcontractors, subconsultants, or suppliers' principal(s), officer(s), affiliate(s) or any other related companies have been debarred from doing business with Broward County or any other governmental agency.

If none, state "none" on this form. Use additional sheets as needed. Vendor should scan and upload any additional form(s) in BidSync.

1. Subcontracted Firm's Name:

Subcontracted Firm's Address:

Subcontracted Firm's Telephone Number:

Contact Person's Name and Position:

Contact Person's E-Mail Address:

Estimated Subcontract/Supplies Contract Amount:

Type of Work/Supplies Provided:

Subcontracted Firm's Address:

Subcontracted Firm's Telephone Number:

Contact Person's Name and Position:

Contact Person's E-Mail Address:

Estimated Subcontract/Supplies Contract Amount:

Type of Work/Supplies Provided:

## SUBCONTRACTORS/SUBCONSULTANTS/SUPPLIERS REQUIREMENT FORM

### Request for Proposals, Request for Qualifications, or Request for Letters of Interest

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- B. If participation goals apply to the contract, only non-certified firms shall be identified on the form. A non-certified firm is a firm that is not listed as a firm for attainment of participation goals (ex. County Business Enterprise or Disadvantaged Business Enterprise), if applicable to the solicitation.
- C. This list shall be kept up -to-date for the duration of the contract. If subcontractors, subconsultants or suppliers are stated, this does not relieve the Vendor from the prime responsibility of full and complete satisfactory performance under any awarded contract.
- D. After completion of the contract/final payment, the Vendor shall certify the final list of non-certified subcontractors, subconsultants, and suppliers that performed or provided services to the County for the referenced contract.
- E. The Vendor has confirmed that none of the recommended subcontractors, subconsultants, or suppliers' principal(s), officer(s), affiliate(s) or any other related companies have been debarred from doing business with Broward County or any other governmental agency.

If none, state "none" on this form. Use additional sheets as needed. Vendor should scan and upload any additional form(s) in BidSync.

3. Subcontracted Firm's Name:

Subcontracted Firm's Address:

Subcontracted Firm's Telephone Number:

Contact Person's Name and Position:

Contact Person's E-Mail Address:

Estimated Subcontract/Supplies Contract Amount:

Type of Work/Supplies Provided:

4. Subcontracted Firm's Name:

Subcontracted Firm's Address:

Subcontracted Firm's Telephone Number:

Contact Person's Name and Position:

Contact Person's E-Mail Address:

Estimated Subcontract/Supplies Contract Amount:

Type of Work/Supplies Provided:

## SUBCONTRACTORS/SUBCONSULTANTS/SUPPLIERS REQUIREMENT FORM

### Request for Proposals, Request for Qualifications, or Request for Letters of Interest

The following forms and supporting information (if applicable) should be returned with Vendor's submittal. If not provided with submittal, the Vendor must submit within three business days of County's request. Failure to timely submit may affect Vendor's evaluation.

- A. The Vendor shall submit a listing of all subcontractors, subconsultants and major material suppliers (firms), if any, and the portion of the contract they will perform. A major material supplier is considered any firm that provides construction material for construction contracts, or commodities for service contracts in excess of \$50,000, to the Vendor.
- B. If participation goals apply to the contract, only non-certified firms shall be identified on the form. A non-certified firm is a firm that is not listed as a firm for attainment of participation goals (ex. County Business Enterprise or Disadvantaged Business Enterprise), if applicable to the solicitation.
- C. This list shall be kept up -to-date for the duration of the contract. If subcontractors, subconsultants or suppliers are stated, this does not relieve the Vendor from the prime responsibility of full and complete satisfactory performance under any awarded contract.
- D. After completion of the contract/final payment, the Vendor shall certify the final list of non-certified subcontractors, subconsultants, and suppliers that performed or provided services to the County for the referenced contract.
- E. The Vendor has confirmed that none of the recommended subcontractors, subconsultants, or suppliers' principal(s), officer(s), affiliate(s) or any other related companies have been debarred from doing business with Broward County or any other governmental agency.

If none, state "none" on this form. Use additional sheets as needed. Vendor should scan and upload any additional form(s) in BidSync.

5. Subcontracted Firm's Name:

Subcontracted Firm's Address:

Subcontracted Firm's Telephone Number:

Contact Person's Name and Position:

Contact Person's E-Mail Address:

Estimated Subcontract/Supplies Contract Amount:

Type of Work/Supplies Provided:



## LETTER OF INTENT BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

Solicitation No.: PNC2116651P1

Project Title: Regional Transmission System Master Plan

Bidder/Offeror Name: Arcadis U.S., Inc.

Address: 8201 Peters Road, Suite 2400 City: Plantation State: FL Zip: 13324

Authorized Representative: Leah Torres, PE Phone: 954.761.3460

CBE Firm/Supplier Name: Gamboa Engineers, Inc

Address: 17433 SW 65 Ct City: Southwest Ranches State: FL Zip: 33331

Authorized Representative: Mario Gamboa, PE Phone: 954.533.1121

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
Electrical, Instrumentation	54		7.00 %
			%
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

**CBE Firm/Supplier Authorized Representative**

Signature: Mario A Gamboa, P.E. Digitally signed by Mario A Gamboa, P.E.  
Date: 2018.07.05 13:30:26 -0400 Title: Owner Manager Date: 07/11/2018

**Bidder/Offeror Authorized Representative**

Signature:  Title: Associate Vice President Date: 07/13/2018

<sup>1</sup> Visit [Census.gov](http://Census.gov) and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

*In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.*





## LETTER OF INTENT BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

**Solicitation No.:** PNC2116651P1

**Project Title:** Regional Transmission System Master Plan

**Bidder/Offeror Name:** Arcadis U.S., Inc.

**Address:** 8201 Peters Road, Suite 2400 **City:** Plantation **State:** FL **Zip:** 33324

**Authorized Representative:** Leah Torres **Phone:** 954.761.3460

**CBE Firm/Supplier Name:** Stoner & Associates, Inc.

**Address:** 4341 SW 62 Avenue **City:** Davie **State:** FL **Zip:** 33314

**Authorized Representative:** James D. Stoner, PSM, President **Phone:** 954.585.0997

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
Land Surveying	541370		2 %
			%
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

**CBE Firm/Supplier Authorized Representative**

**Signature:**  **Title:** President **Date:** 07/11/2018

**Bidder/Offeror Authorized Representative**

**Signature:**  **Title:** Associate Vice President **Date:** 07/13/2018

<sup>1</sup> Visit [Census.gov](http://Census.gov) and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

*In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.*

**Rev.: June 2018**

**Compliance Form No.004**



**LETTER OF INTENT**  
BETWEEN BIDDER/OFFEROR AND  
COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

Solicitation No.: PNC2116651P1

Project Title: Regional Transmission System Master Plan

Bidder/Offeror Name: Arcadis U.S., Inc.

Address: 8201 Peters Road, Suite 2400 City: Plantation State: FL Zip: 33324

Authorized Representative: Leah Torres, PE Phone: 954.761.3460

CBE Firm/Supplier Name: RADISE International, LC

Address: 3296 NW 9th Avenue (Powerline Rd.) City: Oakland Park State: FL Zip: 33309

Authorized Representative: Dave Schobelock, PMP; and Panneer Shanmugam, PE Phone: 954.881.3473

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

**Work to be performed by CBE Firm**

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
Geotechnical	54		2 %
			%
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

**CBE Firm/Supplier Authorized Representative**

Signature:  Title: Dave Schobelock, PMP, Vice President Date: 07/05/2018

**Bidder/Offeror Authorized Representative**

Signature:  Title: Associate Vice President Date: 07/13/2018

<sup>1</sup> Visit [Census.gov](http://Census.gov) and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

*In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.*



## LETTER OF INTENT BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

Solicitation No.: PNC2116651P1

Project Title: Regional Transmission System Master Plan

Bidder/Offeror Name: Arcadis U.S., Inc.

Address: 8201 Peters Road, Suite 2400 City: Plantation State: FL Zip: 13324

Authorized Representative: Leah Torres, PE Phone: 954.761.3460

CBE Firm/Supplier Name: Conemco Engineering, Inc

Address: 2750 N 29 Ave. Suite 119 City: Hollywood State: FL Zip: 33020

Authorized Representative: Jose A Compres Phone: 786.619.4214

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
Architecture and Engineering Services	541330		5.00 %
			%
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

**CBE Firm/Supplier Authorized Representative**

Signature: *Jose A. Compres* Title: President Date: 07/11/2018

**Bidder/Offeror Authorized Representative**

Signature: *Leah Torres* Title: Associate Vice President Date: 07/11/2018

<sup>1</sup> Visit [Census.gov](http://Census.gov) and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

*In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.*

Rev.: June 2018

Compliance Form No. 004



## LETTER OF INTENT BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

**Solicitation No.:** PNC2116651P1

**Project Title:** Regional Transmission System Master Plan

**Bidder/Offeror Name:** Arcadis U.S., Inc.

**Address:** 8201 Peters Road, Suite 2400 **City:** Plantation **State:** FL **Zip:** 33324

**Authorized Representative:** Leah Torres, PE **Phone:** 954.761.3460

**CBE Firm/Supplier Name:** Eckler Engineering, Inc.

**Address:** 4700 Riverside Drive, Suite 110 **City:** Coral Springs **State:** FL **Zip:** 33067

**Authorized Representative:** Douglas K. Hammann, P.E. **Phone:** 954/510-4700

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

### Work to be performed by CBE Firm

Description	NAICS <sup>1</sup>	CBE Contract Amount <sup>2</sup>	CBE Percentage of Total Project Value
<b>In-Line Wastewater Pump Stations</b>	54	N/A	17 %
			%
			%

**AFFIRMATION:** I hereby affirm that the information above is true and correct.

**CBE Firm/Supplier Authorized Representative**

Signature:  Title: President Date: 07/09/2018

**Bidder/Offeror Authorized Representative**

Signature:  Title: Associate Vice President Date: 07/13/2018

<sup>1</sup> Visit [Census.gov](http://Census.gov) and select **NAICS** to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

<sup>2</sup> To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

*In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.*



# CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)  
12/27/2017

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

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

<b>PRODUCER</b> Aon Risk Services South, Inc. Franklin TN Office 501 Corporate Centre Drive Suite 300 Franklin TN 37067 USA	<b>CONTACT NAME:</b> (A/C. No. Ext): (866) 283-7122 FAX: 800-363-0105 (A.C. No.): E-MAIL ADDRESS:
	INSURER(S) AFFORDING COVERAGE NAIC #
<b>INSURED</b> Arcadis U.S., Inc. 630 Plaza Drive Suite 200 Highlands Ranch CO 80129 USA	INSURER A: Greenwich Insurance Company 22322 INSURER B: XL Specialty Insurance Co 37885 INSURER C: XL Insurance America Inc 24554 INSURER D: INSURER E: INSURER F:

**COVERAGES** CERTIFICATE NUMBER: 570069686063 REVISION NUMBER:

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

INSR LTR	TYPE OF INSURANCE	ADDL SUBR INSD WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> Contractual Liability GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input checked="" type="checkbox"/> LOC OTHER:		GEC001076116 SIR applies per policy terms & conditions	01/01/2018	01/01/2019	EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$1,000,000 MED EXP (Any one person) \$10,000 PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$2,000,000 PRODUCTS - COMP/OP AGG \$2,000,000
B	<input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> Property Damage to <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS ONLY		AEC001075816 AOS	01/01/2018	01/01/2019	COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)
B	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED X RETENTION \$10,000		UEC001075916	01/01/2018	01/01/2019	EACH OCCURRENCE \$1,000,000 AGGREGATE \$1,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y / N N / A	RWD943516312 AOS RWR943516712 AK, WI	01/01/2018	01/01/2019	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE-EA EMPLOYEE \$1,000,000 E.L. DISEASE-POLICY LIMIT \$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Evidence of Insurance.

**CERTIFICATE HOLDER**

**CANCELLATION**

Arcadis U.S., Inc. 630 Plaza Drive, Suite 200 Highlands Ranch CO 80129 USA	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE 
--	---

Holder Identifier :

Certificate No : 570069686063





# CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)  
05/30/2017

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

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

<b>PRODUCER</b> Aon Risk Services South, Inc. Franklin TN Office 501 Corporate Centre Drive Suite 300 Franklin TN 37067 USA	<b>CONTACT NAME:</b> (866) 283-7122	FAX (800) 363-0105
	<b>(A/C. No. Ext):</b>	<b>(A/C. No.):</b>
<b>E-MAIL ADDRESS:</b>		
<b>INSURER(S) AFFORDING COVERAGE</b>		<b>NAIC #</b>
<b>INSURED</b> Arcadis U.S., Inc. 630 Plaza Drive Suite 200 Highlands Ranch CO 80129 USA	<b>INSURER A:</b> Steadfast Insurance Company	26387
	<b>INSURER B:</b> Lexington Insurance Company	19437
	<b>INSURER C:</b>	
	<b>INSURER D:</b>	
	<b>INSURER E:</b>	
	<b>INSURER F:</b>	

**COVERAGES**      **CERTIFICATE NUMBER: 570066576295**      **REVISION NUMBER:**

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

INSR LTR	TYPE OF INSURANCE	ADD INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PKU-JECT <input type="checkbox"/> LOC OTHER:						EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG
	AUTOMOBILE LIABILITY  <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)
	UMBRELLA LIAB <input type="checkbox"/> OCCUR EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED    RETENTION						EACH OCCURRENCE AGGREGATE
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR / PARTNER / EXECUTIVE    Y / N OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> N / A If yes, describe under DESCRIPTION OF OPERATIONS below						<input type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E.L. EACH ACCIDENT E.L. DISEASE-EA EMPLOYEE E.L. DISEASE-POLICY LIMIT
A	Archit&Eng Prof			EOC929693803 Professional Liability	06/01/2017	06/01/2018	Each Claim \$1,000,000 Annual Aggregate \$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
Evidence of Insurance.

**CERTIFICATE HOLDER**

**CANCELLATION**

Arcadis U.S., Inc. 630 Plaza Drive, Suite 200 Highlands Ranch CO 80120-2379 USA	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.  AUTHORIZED REPRESENTATIVE  
---	---

Holder Identifier :

Certificate No : 570066576295



# ADDITIONAL REMARKS SCHEDULE

AGENCY Aon Risk Services South, Inc.		NAMED INSURED Arcadis U.S., Inc.	
POLICY NUMBER See Certificate Number: 570066576295			
CARRIER See Certificate Number: 570066576295	NAIC CODE	EFFECTIVE DATE:	

**ADDITIONAL REMARKS**

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,  
 FORM NUMBER: ACORD 25 FORM TITLE: Certificate of Liability Insurance

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER	
INSURER	
INSURER	
INSURER	

**ADDITIONAL POLICIES** If a policy below does not include limit information, refer to the corresponding policy on the ACORD certificate form for policy limits.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS	
	OTHER							
A	Env Contr Poll			Eoc929693803 Pollution Liability SIR applies per policy terms & conditions	06/01/2017	06/01/2018	Each claim	\$2,000,000
							Annual Aggregate	\$2,000,000
	<input checked="" type="checkbox"/> Professional Liabil							
	<input checked="" type="checkbox"/> and Contractors							
	<input checked="" type="checkbox"/> Claims-Made							
	<input checked="" type="checkbox"/> Pollution Liability							

Broward County Board of County Commissioners

PCN2116651P1



The following is a summary of all litigation for the preceding five years that have not been dismissed. Such claims are disputed and not reasonably expected to be adversely determined, applicable insurance is available, and/or such claims are not reasonably expected to materially impact the financial condition or the operations of Arcadis.

Litigation Five-Year History: Arcadis U.S., Inc. and all affiliates

Plaintiff	Defendant (Arcadis Affiliate)	Date Filed	Nature of Incident	Type of Claim	Jurisdiction
Hayes, Bradley Steven	Arcadis US	Oct - 15	Plaintiff alleged that family members suffered fatal illnesses on property that was contaminated by toxic metals; alleged a number of defendants, including Arcadis, responsible.	Prof. Liability	USDC - ED KY
Interstate Home Loan	Arcadis US	May - 15	Breach of contract claim against client and negligence claim against Arcadis related to	Prof. Liability	Suffolk County , NY
Allen, Paul (Sauk Village)	Arcadis US	Nov- 13	Class action involving property damage for alleged underwater contamination by client and	Prof. Liability	Cook County, IL
DR Horton	Arcadis US	Oct - 13	3rd party claims against several subcontractors alleging breach of contract, negligence, indemnity and contribution in connection with alleged defects	Negligence/Breach of Contract/Prof. Liability	Duval County, FL
Heatcool	The Rise Group	Aug- 13	Client's subcontractor filed breach of contract claim for failure to pay for services rendered	Breach of Contract	Cook County, IL

ARCADIS Confidential

BidSync

Page 1 of 1





**Arcadis**

8201 Peters Road  
Suite 2400  
Plantation, Florida  
33324  
Tel: 954 761 3460

[www.arcadis.com](http://www.arcadis.com)



Supplier: **ARCADIS**

**Standard Instructions to Vendors  
Request for Proposals, Request for Qualifications, or Request for Letters of Interest**

Vendors are instructed to read and follow the instructions carefully, as any misinterpretation or failure to comply with instructions may lead to a Vendor's submittal being rejected.

**Vendor MUST submit its solicitation response electronically and MUST confirm its submittal in order for the County to receive a valid response through BidSync. Refer to the Purchasing Division website or contact BidSync for submittal instructions.**

**A. Responsiveness Criteria:**

In accordance with Broward County Procurement Code Section 21.8.b.65, a Responsive Bidder [Vendor] means a person who has submitted a proposal which conforms in all material respects to a solicitation. The solicitation submittal of a responsive Vendor must be submitted on the required forms, which contain all required information, signatures, notarizations, insurance, bonding, security, or other mandated requirements required by the solicitation documents to be submitted at the time of proposal opening.

Failure to provide the information required below at the time of submittal opening may result in a recommendation Vendor is non-responsive by the Director of Purchasing. The Selection or Evaluation Committee will determine whether the firm is responsive to the requirements specified herein. The County reserves the right to waive minor technicalities or irregularities as is in the best interest of the County in accordance with Section 21.30.f.1(c) of the Broward County Procurement Code.

Below are standard responsiveness criteria; refer to **Special Instructions to Vendors**, for Additional Responsiveness Criteria requirement(s).

**1. Lobbyist Registration Requirement Certification**

Refer to **Lobbyist Registration Requirement Certification**. The completed form should be submitted with the solicitation response but must be submitted within three business days of County's request. Vendor may be deemed non-responsive for failure to fully comply within stated timeframes.

**2. Addenda**

The County reserves the right to amend this solicitation prior to the due date. Any change(s) to this solicitation will be conveyed through the written addenda process. Only written addenda will be binding. If a "must" addendum is issued, Vendor must follow instructions and submit required information, forms, or acknowledge addendum, as instructed therein. It is the responsibility of all potential Vendors to monitor the solicitation for any changing information, prior to submitting their response.

**B. Responsibility Criteria:**

Definition of a Responsible Vendor: In accordance with Section 21.8.b.64 of the Broward County Procurement Code, a Responsible Vendor means a Vendor who has the capability in all respects to perform the contract requirements, and the integrity and reliability which will assure good faith performance.

The Selection or Evaluation Committee will recommend to the awarding authority a determination of a Vendor's responsibility. At any time prior to award, the awarding authority may find that a Vendor is

not responsible to receive a particular award.

Failure to provide any of this required information and in the manner required may result in a recommendation by the Director of Purchasing that the Vendor is non-responsive.

Below are standard responsibility criteria; refer to **Special Instructions to Vendors**, for Additional Responsibility Criteria requirement(s).

## 1. **Litigation History**

- a. All Vendors are required to disclose to the County all "material" cases filed, pending, or resolved during the last three (3) years prior to the solicitation response due date, whether such cases were brought by or against the Vendor, any parent or subsidiary of the Vendor, or any predecessor organization. A case is considered to be "material" if it relates, in whole or in part, to any of the following:
  - i. A similar type of work that the vendor is seeking to perform for the County under the current solicitation;
  - ii. An allegation of negligence, error or omissions, or malpractice against the vendor or any of its principals or agents who would be performing work under the current solicitation;
  - iii. A vendor's default, termination, suspension, failure to perform, or improper performance in connection with any contract;
  - iv. The financial condition of the vendor, including any bankruptcy petition (voluntary and involuntary) or receivership; or
  - v. A criminal proceeding or hearing concerning business-related offenses in which the vendor or its principals (including officers) were/are defendants.
- b. For each material case, the Vendor is required to provide all information identified on the **Litigation History Form**.
- c. The County will consider a Vendor's litigation history information in its review and determination of responsibility.
- d. If the Vendor is a joint venture, the information provided should encompass the joint venture and each of the entities forming the joint venture.
- e. A Vendor is also required to disclose to the County any and all case(s) that exist between the County and any of the Vendor's subcontractors/subconsultants proposed to work on this project.
- f. Failure to disclose any material case, or to provide all requested information in connection with each such case, may result in the Vendor being deemed non-responsive.

## 2. **Financial Information**

- a. All Vendors are required to provide the Vendor's financial statements at the time of submittal in order to demonstrate the Vendor's financial capabilities.
- b. Each Vendor shall submit its most recent two years of financial statements for review. The financial statements are not required to be audited financial statements. The annual financial statements will be in the form of:
  - i. Balance sheets, income statements and annual reports; or
  - ii. Tax returns; or
  - iii. SEC filings.

If tax returns are submitted, ensure it does not include any personal information (as defined under Florida Statutes Section 501.171, Florida Statutes), such as social security numbers, bank account or credit card numbers, or any personal pin numbers. If any personal information data is part of financial statements, redact information prior to submitting a response the County.

- c. If a Vendor has been in business for less than the number of years of required financial statements, then the Vendor must disclose all years that the Vendor has been in business, including any partial year-to-date financial statements.
- d. The County may consider the unavailability of the most recent year's financial statements and whether the Vendor acted in good faith in disclosing the financial documents in its evaluation.
- e. Any claim of confidentiality on financial statements should be asserted at the time of submittal. Refer to **Standard Instructions to Vendors**, Confidential Material/ Public Records and Exemptions for instructions on submitting confidential financial statements. The Vendor's failure to provide the information as instructed may lead to the information becoming public.
- f. Although the review of a Vendor's financial information is an issue of responsibility, the failure to either provide the financial documentation or correctly assert a confidentiality claim pursuant the Florida Public Records Law and the solicitation requirements (Confidential Material/ Public Records and Exemptions section) may result in a recommendation of non-responsiveness by the Director of Purchasing.

### 3. Authority to Conduct Business in Florida

- a. A Vendor must have the authority to transact business in the State of Florida and be in good standing with the Florida Secretary of State. For further information, contact the Florida Department of State, Division of Corporations.
- b. The County will review the Vendor's business status based on the information provided in response to this solicitation.
- c. It is the Vendor's responsibility to comply with all state and local business requirements.
- d. Vendor should list its active Florida Department of State Division of Corporations Document Number (or Registration No. for fictitious names) in the **Vendor Questionnaire**, Question No. 10.
- e. If a Vendor is an out-of-state or foreign corporation or partnership, the Vendor must obtain the authority to transact business in the State of Florida or show evidence of application for the authority to transact business in the State of Florida, upon request of the County.
- f. A Vendor that is not in good standing with the Florida Secretary of State at the time of a submission to this solicitation may be deemed non-responsible.
- g. If successful in obtaining a contract award under this solicitation, the Vendor must remain in good standing throughout the contractual period of performance.

### 4. Affiliated Entities of the Principal(s)

- a. All Vendors are required to disclose the names and addresses of "affiliated entities" of the Vendor's principal(s) over the last five (5) years (from the solicitation opening deadline) that have acted as a prime Vendor with the County. The Vendor is required to provide all

information required on the **Affiliated Entities of the Principal(s) Certification Form**.

- b. The County will review all affiliated entities of the Vendor's principal(s) for contract performance evaluations and the compliance history with the County's Small Business Program, including CBE, DBE and SBE goal attainment requirements. "Affiliated entities" of the principal(s) are those entities related to the Vendor by the sharing of stock or other means of control, including but not limited to a subsidiary, parent or sibling entity.
- c. The County will consider the contract performance evaluations and the compliance history of the affiliated entities of the Vendor's principals in its review and determination of responsibility.

## 5. Insurance Requirements

The **Insurance Requirement Form** reflects the insurance requirements deemed necessary for this project. It is not necessary to have this level of insurance in effect at the time of submittal, but it is necessary to submit certificates indicating that the Vendor currently carries the insurance or to submit a letter from the carrier indicating it can provide insurance coverages.

## C. Additional Information and Certifications

The following forms and supporting information (if applicable) should be returned with Vendor's submittal. If not provided with submittal, the Vendor must submit within three business days of County's request. Failure to timely submit may affect Vendor's evaluation.

### 1. Vendor Questionnaire

Vendor is required to submit detailed information on their firm. Refer to the **Vendor Questionnaire** and submit as instructed.

### 2. Standard Certifications

Vendor is required to certify to the below requirements. Refer to the **Standard Certifications** and submit as instructed.

- a. **Cone of Silence Requirement Certification**
- b. **Drug-Free Workplace Certification**
- c. **Non-Collusion Certification**
- d. **Public Entities Crimes Certification**
- e. **Scrutinized Companies List Certification**

### 3. Subcontractors/Subconsultants/Suppliers Requirement

The Vendor shall submit a listing of all subcontractors, subconsultants, and major material suppliers, if any, and the portion of the contract they will perform. Vendors must follow the instructions included on the **Subcontractors/Subconsultants/Suppliers Information Form** and submit as instructed.

## D. Standard Agreement Language Requirements

1. The acceptance of or any exceptions taken to the terms and conditions of the County's Agreement shall be considered a part of a Vendor's submittal and will be considered by the Selection or Evaluation Committee.
2. The applicable Agreement terms and conditions for this solicitation are indicated in the **Special Instructions to Vendors**.
3. Vendors are required to review the applicable terms and conditions and submit the **Agreement Exception Form**. If the **Agreement Exception Form** is not provided with the submittal, it shall

be deemed an affirmation by the Vendor that it accepts the Agreement terms and conditions as disclosed in the solicitation.

4. If exceptions are taken, the Vendor must specifically identify each term and condition with which it is taking an exception. Any exception not specifically listed is deemed waived. Simply identifying a section or article number is not sufficient to state an exception. Provide either a redlined version of the specific change(s) or specific proposed alternative language. Additionally, a brief justification specifically addressing each provision to which an exception is taken should be provided.
5. Submission of any exceptions to the Agreement does not denote acceptance by the County. Furthermore, taking exceptions to the County's terms and conditions may be viewed unfavorably by the Selection or Evaluation Committee and ultimately may impact the overall evaluation of a Vendor's submittal.

#### **E. Evaluation Criteria**

1. The Selection or Evaluation Committee will evaluate Vendors as per the **Evaluation Criteria**. The County reserves the right to obtain additional information from a Vendor.
2. Vendor has a continuing obligation to inform the County in writing of any material changes to the information it has previously submitted. The County reserves the right to request additional information from Vendor at any time.
3. For Request for Proposals, the following shall apply:
  - a. The Director of Purchasing may recommend to the Evaluation Committee to short list the most qualified firms prior to the Final Evaluation.
  - b. The Evaluation Criteria identifies points available; a total of 100 points is available.
  - c. If the Evaluation Criteria includes a request for pricing, the total points awarded for price is determined by applying the following formula:
$$\frac{(\text{Lowest Proposed Price}/\text{Vendor's Price}) \times (\text{Maximum Number of Points for Price})}{\text{Price Score}}$$
  - d. After completion of scoring, the County may negotiate pricing as in its best interest.
4. For Requests for Letters of Interest or Request for Qualifications, the following shall apply:
  - a. The Selection or Evaluation Committee will create a short list of the most qualified firms.
  - b. The Selection or Evaluation Committee will either:
    - i. Rank shortlisted firms; or
    - ii. If the solicitation is part of a two-step procurement, shortlisted firms will be requested to submit a response to the Step Two procurement.

#### **F. Demonstrations**

If applicable, as indicated in **Special Instructions to Vendors**, Vendors will be required to demonstrate the nature of their offered solution. After receipt of submittals, all Vendors will receive a description of, and arrangements for, the desired demonstration. A copy of the demonstration (hard copy, DVD, CD, flash drive or a combination of both) should be given to the Purchasing Agent at the demonstration meeting to retain in the Purchasing files.

## **G. Presentations**

Vendors that are found to be both responsive and responsible to the requirements of the solicitation and/or shortlisted (if applicable) will have an opportunity to make an oral presentation to the Selection or Evaluation Committee on the Vendor's approach to this project and the Vendor's ability to perform. The committee may provide a list of subject matter for the discussion. All Vendor's will have equal time to present but the question-and-answer time may vary.

## **H. Public Art and Design Program**

If indicated in **Special Instructions to Vendors**, Public Art and Design Program, Section 1-88, Broward County Code of Ordinances, applies to this project. It is the intent of the County to functionally integrate art, when applicable, into capital projects and integrate artists' design concepts into this improvement project. The Vendor may be required to collaborate with the artist(s) on design development within the scope of this request. Artist(s) shall be selected by Broward County through an independent process. For additional information, contact the Broward County Cultural Division.

## **I. Committee Appointment**

The Cone of Silence shall be in effect for County staff at the time of the Selection or Evaluation Committee appointment and for County Commissioners and Commission staff at the time of the Shortlist Meeting of the Selection Committee or the Initial Evaluation Meeting of the Evaluation Committee. The committee members appointed for this solicitation are available on the Purchasing Division's website under Committee Appointment.

## **J. Committee Questions, Request for Clarifications, Additional Information**

At any committee meeting, the Selection or Evaluation Committee members may ask questions, request clarification, or require additional information of any Vendor's submittal or proposal. It is highly recommended Vendors attend to answer any committee questions (if requested), including a Vendor representative that has the authority to bind.

Vendor's answers may impact evaluation (and scoring, if applicable). Upon written request to the Purchasing Agent prior to the meeting, a conference call number will be made available for Vendor participation via teleconference. Only Vendors that are found to be both responsive and responsible to the requirements of the solicitation and/or shortlisted (if applicable) are requested to participate in a final (or presentation) Selection or Evaluation committee meeting.

## **K. Vendor Questions**

The County provides a specified time for Vendors to ask questions and seek clarification regarding solicitation requirements. All questions or clarification inquiries must be submitted through BidSync by the date and time referenced in the solicitation document (including any addenda). The County will respond to questions via Bid Sync.

## **L. Confidential Material/ Public Records and Exemptions**

1. Broward County is a public agency subject to Chapter 119, Florida Statutes. Upon receipt, all submittals become "public records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes. Submittals may be posted on the County's public website or included in a public records request response, unless there is a declaration of "confidentiality" pursuant to the public records law and in accordance with the procedures in this section.
2. Any confidential material(s) the Vendor asserts is exempt from public disclosure under Florida Statutes must be labeled as "Confidential", and marked with the specific statute and subsection

asserting exemption from Public Records.

3. To submit confidential material, three hardcopies must be submitted in a sealed envelope, labeled with the solicitation number, title, date and the time of solicitation opening to:

Broward County Purchasing Division  
115 South Andrews Avenue, Room 212  
Fort Lauderdale, FL 33301

4. Material will not be treated as confidential if the Vendor does not cite the applicable Florida Statute (s) allowing the document to be treated as confidential.
5. Any materials that the Vendor claims to be confidential and exempt from public records must be marked and separated from the submittal. If the Vendor does not comply with these instructions, the Vendor's claim for confidentiality will be deemed as waived.
6. Submitting confidential material may impact full discussion of your submittal by the Selection or Evaluation Committee because the Committee will be unable to discuss the details contained in the documents cloaked as confidential at the publicly noticed Committee meeting.

#### **M. Copyrighted Materials**

Copyrighted material is not exempt from the Public Records Law, Chapter 119, Florida Statutes. Submission of copyrighted material in response to any solicitation will constitute a license and permission for the County to make copies (including electronic copies) as reasonably necessary for the use by County staff and agents, as well as to make the materials available for inspection or production pursuant to Public Records Law, Chapter 119, Florida Statutes.

#### **N. State and Local Preferences**

If the solicitation involves a federally funded project where the fund requirements prohibit the use of state and/or local preferences, such preferences contained in the Local Preference Ordinance and Broward County Procurement Code will not be applied in the procurement process.

#### **O. Local Preference**

Except where otherwise prohibited by federal or state law or other funding source restrictions, a local Vendor whose submittal is within 5% of the highest total ranked Vendor outside of the preference area will become the Vendor with whom the County will proceed with negotiations for a final contract. Refer to **Local Vendor Certification Form (Preference and Tiebreaker)** for further information.

#### **P. Tiebreaker Criteria**

In accordance with Section 21.31.d of the Broward County Procurement Code, the tiebreaker criteria shall be applied based upon the information provided in the Vendor's response to the solicitation. In order to receive credit for any tiebreaker criterion, complete and accurate information must be contained in the Vendor's submittal.

1. **Local Vendor Certification Form (Preference and Tiebreaker);**
2. **Domestic Partnership Act Certification (Requirement and Tiebreaker);**
3. **Tiebreaker Criteria Form: Volume of Work Over Five Years**

#### **Q. Posting of Solicitation Results and Recommendations**

The Broward County Purchasing Division's website is the location for the County's posting of all



solicitations and contract award results. It is the obligation of each Vendor to monitor the website in order to obtain complete and timely information.

## **R. Review and Evaluation of Responses**

A Selection or Evaluation Committee is responsible for recommending the most qualified Vendor(s). The process for this procurement may proceed in the following manner:

1. The Purchasing Division delivers the solicitation submittals to agency staff for summarization for the committee members. Agency staff prepares a report, including a matrix of responses submitted by the Vendors. This may include a technical review, if applicable.
2. Staff identifies any incomplete responses. The Director of Purchasing reviews the information and makes a recommendation to the Selection or Evaluation Committee as to each Vendor's responsiveness to the requirements of the solicitation. The final determination of responsiveness rests solely on the decision of the committee.
3. At any time prior to award, the awarding authority may find that a Vendor is not responsible to receive a particular award. The awarding authority may consider the following factors, without limitation: debarment or removal from the authorized Vendors list or a final decree, declaration or order by a court or administrative hearing officer or tribunal of competent jurisdiction that the Vendor has breached or failed to perform a contract, claims history of the Vendor, performance history on a County contract(s), an unresolved concern, or any other cause under this code and Florida law for evaluating the responsibility of a Vendor.

## **S. Vendor Protest**

Sections 21.118 and 21.120 of the Broward County Procurement Code set forth procedural requirements that apply if a Vendor intends to protest a solicitation or proposed award of a contract and state in part the following:

1. Any protest concerning the solicitation or other solicitation specifications or requirements must be made and received by the County within seven business days from the posting of the solicitation or addendum on the Purchasing Division's website. Such protest must be made in writing to the Director of Purchasing. Failure to timely protest solicitation specifications or requirements is a waiver of the ability to protest the specifications or requirements.
2. Any protest concerning a solicitation or proposed award above the award authority of the Director of Purchasing, after the RLI or RFP opening, shall be submitted in writing and received by the Director of Purchasing within five business days from the posting of the recommendation of award for Invitation to Bids or the final recommendation of ranking for Request for Letters of Interest and Request for Proposals on the Purchasing Division's website.
3. Any actual or prospective Vendor who has a substantial interest in and is aggrieved in connection with the proposed award of a contract which does not exceed the amount of the award authority of the Director of Purchasing, may protest to the Director of Purchasing. The protest shall be submitted in writing and received within three (3) business days from the posting of the recommendation of award for Invitation to Bids or the final recommendation of ranking for Request for Letters of Interest and Request for Proposals on the Purchasing Division's website.
4. For purposes of this section, a business day is defined as Monday through Friday between 8:30 a.m. and 5:00 p.m. Failure to timely file a protest within the time prescribed for a proposed contract award shall be a waiver of the Vendor's right to protest.

5. Protests arising from the decisions and votes of a Selection or Evaluation Committee shall be limited to protests based upon the alleged deviations from established committee procedures set forth in the Broward County Procurement Code and existing written guidelines. Any allegations of misconduct or misrepresentation on the part of a competing Vendor shall not be considered a protest.
6. As a condition of initiating any protest, the protestor shall present the Director of Purchasing a nonrefundable filing fee in accordance with the table below.

<u>Estimated Contract Amount</u>	<u>Filing Fee</u>
\$30,000 - \$250,000	\$ 500
\$250,001 - \$500,000	\$1,000
\$500,001 - \$5 million	\$3,000
Over \$5 million	\$5,000

If no contract proposal amount was submitted, the estimated contract amount shall be the County's estimated contract price for the project. The County may accept cash, money order, certified check, or cashier's check, payable to Broward County Board of Commissioners.

#### **T. Right of Appeal**

Pursuant to Section 21.83.d of the Broward County Procurement Code, any Vendor that has a substantial interest in the matter and is dissatisfied or aggrieved in connection with the Selection or Evaluation Committee's determination of responsiveness may appeal the determination pursuant to Section 21.120 of the Broward County Procurement Code.

1. The appeal must be in writing and sent to the Director of Purchasing within ten (10) calendar days of the determination by the Selection or Evaluation Committee to be deemed timely.
2. As required by Section 21.120, the appeal must be accompanied by an appeal bond by a Vendor having standing to protest and must comply with all other requirements of this section.
3. The institution and filing of an appeal is an administrative remedy to be employed prior to the institution and filing of any civil action against the County concerning the subject matter of the appeal.

#### **U. Rejection of Responses**

The Selection or Evaluation Committee may recommend rejecting all submittals as in the best interests of the County. The rejection shall be made by the Director of Purchasing, except when a solicitation was approved by the Board, in which case the rejection shall be made by the Board.

#### **V. Negotiations**

The County intends to conduct the first negotiation meeting no later than two weeks after approval of the final ranking as recommended by the Selection or Evaluation Committee. At least one of the representatives for the Vendor participating in negotiations with the County must be authorized to bind the Vendor. In the event that the negotiations are not successful within a reasonable timeframe (notification will be provided to the Vendor) an impasse will be declared and negotiations with the first-ranked Vendor will cease. Negotiations will begin with the next ranked Vendor, etc. until such time that all requirements of Broward County Procurement Code have been met.

#### **W. Submittal Instructions:**

1. Broward County does not require any personal information (as defined under Section 501.171, Florida Statutes), such as social security numbers, driver license numbers, passport, military ID, bank account or credit card numbers, or any personal pin numbers, in order to submit a response for ANY Broward County solicitation. **DO NOT INCLUDE** any personal information data in any document submitted to the County. If any personal information data is part of a submittal, this information must be redacted prior to submitting a response to the County.
2. **Vendor MUST submit its solicitation response electronically and MUST confirm its submittal in order for the County to receive a valid response through BidSync.** It is the Vendor's sole responsibility to assure its response is submitted and received through BidSync by the date and time specified in the solicitation.
3. The County will not consider solicitation responses received by other means. Vendors are encouraged to submit their responses in advance of the due date and time specified in the solicitation document. In the event that the Vendor is having difficulty submitting the solicitation document through Bid Sync, immediately notify the Purchasing Agent and then contact BidSync for technical assistance.
4. Vendor must view, submit, and/or accept each of the documents in BidSync. Web-fillable forms can be filled out and submitted through BidSync.
5. After all documents are viewed, submitted, and/or accepted in BidSync, the Vendor must upload additional information requested by the solicitation (i.e. Evaluation Criteria and Financials Statements) in the Item Response Form in BidSync, under line one (regardless if pricing requested).
6. Vendor should upload responses to Evaluation Criteria in Microsoft Word or Excel format.
7. If the Vendor is declaring any material confidential and exempt from Public Records, refer to Confidential Material/ Public Records and Exemptions for instructions on submitting confidential material.
8. After all files are uploaded, Vendor must submit and **CONFIRM** its offer (by entering password) for offer to be received through BidSync.
9. If a solicitation requires an original Proposal Bond (per Special Instructions to Vendors), Vendor must submit in a sealed envelope, labeled with the solicitation number, title, date and the time of solicitation opening to:

Broward County Purchasing Division  
115 South Andrews Avenue, Room 212  
Fort Lauderdale, FL 33301

A copy of the Proposal Bond should also be uploaded into Bid Sync; this does not replace the requirement to have an original proposal bond. Vendors must submit the original Proposal Bond, by the solicitation due date and time.

Supplier: **ARCADIS**

**VENDOR QUESTIONNAIRE AND STANDARD CERTIFICATIONS**  
**Request for Proposals, Request for Qualifications, or Request for Letters of Interest**

Vendor should complete questionnaire and complete and acknowledge the standard certifications and submit with the solicitation response. If not submitted with solicitation response, it must be submitted within three business days of County's request. Failure to timely submit may affect Vendor's evaluation.

**If a response requires additional information, the Vendor should upload a written detailed response with submittal; each response should be numbered to match the question number.** The completed questionnaire and attached responses will become part of the procurement record. It is imperative that the person completing the Vendor Questionnaire be knowledgeable about the proposing Vendor's business and operations.

1. Legal business name:**Arcadis U.S., Inc.**
2. Doing Business As/ Fictitious Name (if applicable):
3. Federal Employer I.D. no. (FEIN):**57-0373224**
4. Dun and Bradstreet No.:**08-150-9838**
5. Website address (if applicable): **www.arcadis.com**
6. Principal place of business address: **630 Plaza Drive, Suite 10  
Highlands Ranch, CO 80129**
7. Office location responsible for this project: **8201 Peters Road, Suite 2400  
Plantation, FL 33324**
8. Telephone no.:**954-761-3460** Fax no.:**954-761-7939**
9. Type of business (check appropriate box):
  - Corporation (specify the state of incorporation):**Delaware**
  - Sole Proprietor
  - Limited Liability Company (LLC)
  - Limited Partnership
  - General Partnership (State and County Filed In)
  - Other - Specify
10. List Florida Department of State, Division of Corporations document number (or registration number if fictitious name): **F98000001104**
11. List name and title of each principal, owner, officer, and major shareholder:
  - a) **N/A**
  - b)
  - c)
  - d)
12. AUTHORIZED CONTACT(S) FOR YOUR FIRM:

Name: **Leah Torres, PE**  
Title: **Associate Vice President**  
E-mail: **leah.torres@arcadis.com**  
Telephone No.: **954-525-2499**

Name:  
Title:  
E-mail:  
Telephone No.:

- 13. Has your firm, its principals, officers or predecessor organization(s) been debarred or suspended by any government entity within the last three years? If yes, specify details in an attached written response.  Yes  No
- 14. Has your firm, its principals, officers or predecessor organization(s) ever been debarred or suspended by any government entity? If yes, specify details in an attached written response, including the reinstatement date, if granted.  Yes  No
- 15. Has your firm ever failed to complete any services and/or delivery of products during the last three (3) years? If yes, specify details in an attached written response.  Yes  No
- 16. Is your firm or any of its principals or officers currently principals or officers of another organization? If yes, specify details in an attached written response.  Yes  No
- 17. Have any voluntary or involuntary bankruptcy petitions been filed by or against your firm, its parent or subsidiaries or predecessor organizations during the last three years? If yes, specify details in an attached written response.  Yes  No
- 18. Has your firm's surety ever intervened to assist in the completion of a contract or have Performance and/or Payment Bond claims been made to your firm or its predecessor's sureties during the last three years? If yes, specify details in an attached written response, including contact information for owner and surety.  Yes  No
- 19. Has your firm ever failed to complete any work awarded to you, services and/or delivery of products during the last three (3) years? If yes, specify details in an attached written response.  Yes  No
- 20. Has your firm ever been terminated from a contract within the last three years? If yes, specify details in an attached written response.  Yes  No
- 21. Living Wage solicitations only: In determining what, if any, fiscal impacts(s) are a result of the Ordinance for this solicitation, provide the following for informational purposes only. Response is not considered in determining the award of this contract.  
Living Wage had an effect on the pricing.  Yes  No  
 N/A  
If yes, Living Wage increased the pricing by% or decreased the pricing by%.

**Cone of Silence Requirement Certification:**

The Cone of Silence Ordinance, Section 1-266, Broward County Code of Ordinances prohibits certain communications among Vendors, Commissioners, County staff, and Selection or Evaluation Committee members. Identify on a separate sheet any violations of this Ordinance by any members of the responding firm or its joint ventures. After the application of the Cone of Silence, inquiries regarding this solicitation should be directed to the Director of Purchasing or designee. The Cone of Silence terminates when the County Commission or other awarding authority takes action which ends the solicitation.

The Vendor hereby certifies that: (check each box)

- The Vendor has read Cone of Silence Ordinance, Section 1-266, Broward County Code of Ordinances; and
- The Vendor understands that the Cone of Silence for this competitive solicitation shall be in effect beginning

upon the appointment of the Selection or Evaluation Committee, for communication regarding this solicitation with the County Administrator, Deputy County Administrator, Assistant County Administrators, and Assistants to the County Administrator and their respective support staff or any person, including Evaluation or Selection Committee members, appointed to evaluate or recommend selection in this RFP/RLI process. For Communication with County Commissioners and Commission staff, the Cone of Silence allows communication until the initial Evaluation or Selection Committee Meeting.

- The Vendor agrees to comply with the requirements of the Cone of Silence Ordinance.

**Drug-Free Workplace Requirements Certification:**

Section 21.31.a. of the Broward County Procurement Code requires awards of all competitive solicitations requiring Board award be made only to firms certifying the establishment of a drug free workplace program. The program must consist of:

1. Publishing a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the offeror's workplace, and specifying the actions that will be taken against employees for violations of such prohibition;
2. Establishing a continuing drug-free awareness program to inform its employees about:
  - a. The dangers of drug abuse in the workplace;
  - b. The offeror's policy of maintaining a drug-free workplace;
  - c. Any available drug counseling, rehabilitation, and employee assistance programs; and
  - d. The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
3. Giving all employees engaged in performance of the contract a copy of the statement required by subparagraph 1;
4. Notifying all employees, in writing, of the statement required by subparagraph 1, that as a condition of employment on a covered contract, the employee shall:
  - a. Abide by the terms of the statement; and
  - b. Notify the employer in writing of the employee's conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or of any state, for a violation occurring in the workplace NO later than five days after such conviction.
5. Notifying Broward County government in writing within 10 calendar days after receiving notice under subdivision 4.b above, from an employee or otherwise receiving actual notice of such conviction. The notice shall include the position title of the employee;
6. Within 30 calendar days after receiving notice under subparagraph 4 of a conviction, taking one of the following actions with respect to an employee who is convicted of a drug abuse violation occurring in the workplace:
  - a. Taking appropriate personnel action against such employee, up to and including termination; or
  - b. Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a federal, state, or local health, law enforcement, or other appropriate agency; and
7. Making a good faith effort to maintain a drug-free workplace program through implementation of subparagraphs 1 through 6.

The Vendor hereby certifies that: (check box)

- The Vendor certifies that it has established a drug free workplace program in accordance with the above requirements.

**Non-Collusion Certification:**

Vendor shall disclose, to their best knowledge, any Broward County officer or employee, or any relative of any such officer or employee as defined in Section 112.3135 (1) (c), Florida Statutes, who is an officer or director of, or has a material interest in, the Vendor's business, who is in a position to influence this procurement. Any Broward

County officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement. Failure of a Vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the Broward County Procurement Code.

The Vendor hereby certifies that: (select one)

- The Vendor certifies that this offer is made independently and free from collusion; or
- The Vendor is disclosing names of officers or employees who have a material interest in this procurement and is in a position to influence this procurement. Vendor must include a list of name(s), and relationship(s) with its submittal.

**Public Entities Crimes Certification:**

In accordance with Public Entity Crimes, Section 287.133, Florida Statutes, a person or affiliate placed on the convicted vendor list following a conviction for a public entity crime may not submit on a contract: to provide any goods or services; for construction or repair of a public building or public work; for leases of real property to a public entity; and may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in s. 287.017 for Category Two for a period of 36 months following the date of being placed on the convicted vendor list.

The Vendor hereby certifies that: (check box)

- The Vendor certifies that no person or affiliates of the Vendor are currently on the convicted vendor list and/or has not been found to commit a public entity crime, as described in the statutes.

**Scrutinized Companies List Certification:**

Any company, principals, or owners on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or the Scrutinized Companies that Boycott Israel List is prohibited from submitting a response to a solicitation for goods or services in an amount equal to or greater than \$1 million.

The Vendor hereby certifies that: (check each box)

- The Vendor, owners, or principals are aware of the requirements of Sections 287.135, 215.473, and 215.4275, Florida Statutes, regarding Companies on the Scrutinized Companies with Activities in Sudan List the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or the Scrutinized Companies that Boycott Israel List; and
- The Vendor, owners, or principals, are eligible to participate in this solicitation and are not listed on either the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or the Scrutinized Companies that Boycott Israel List; and
- If awarded the Contract, the Vendor, owners, or principals will immediately notify the County in writing if any of its principals are placed on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or the Scrutinized Companies that Boycott Israel List.

I hereby certify the information provided in the Vendor Questionnaire and Standard Certifications:

<b>Leah Torres, PE</b>	<b>Associate Vice President</b>	<b>7/5/2018</b>
*AUTHORIZED SIGNATURE/NAME	TITLE	DATE

Vendor Name: **Arcadis, U.S., Inc.**

\* I certify that I am authorized to sign this solicitation response on behalf of the Vendor as indicated in Certificate as to Corporate Principal, designation letter by Director/Corporate Officer, or other business authorization to bind on behalf of the Vendor. As the Vendor's authorized representative, I attest that any and all statements, oral, written or otherwise, made in support of the Vendor's response, are accurate, true and correct. I also acknowledge that inaccurate, untruthful, or incorrect statements made in support of the Vendor's response may be used by the County as a basis for rejection, rescission of the award, or termination of the contract and may also serve as the basis for debarment of Vendor pursuant to Section 21.119 of the Broward County Procurement Code. I certify that the Vendor's response is made without prior understanding, agreement, or connection with any corporation, firm or person submitting a response for the same items/services, and is in all respects fair and without collusion or fraud. I also certify that the Vendor agrees to abide by all terms and conditions of this solicitation, acknowledge and accept all of the solicitation pages as well as any special instructions sheet(s).



Supplier: **ARCADIS**

**Office of Economic and Small Business Requirements: CBE Goal Participation**

- A. In accordance with the Broward County Business Opportunity Act of 2012, Section 1-81, Code of Ordinances, as amended (the “Business Opportunity Act”), the County Business Enterprise (CBE) Program is applicable to this contract. All Vendors responding to this solicitation are required to utilize CBE firms to perform the assigned participation goal for this contract.
- B. The CBE participation goal will be established based on the expected expenditure amount for the proposed scope of services for the project. The Office of Economic and Small Business Development (OESBD) will not include alternate items, optional services or allowances when establishing the CBE participation goal. If the County subsequently chooses to award any alternate items, optional services or allowances as determined by OESBD and the Contract Administrator to be related to the scope of services, OESBD may apply the established CBE participation goal. In such an instance, the County will issue a written notice to the successful Vendor that the CBE participation goal will also apply to the alternate items, optional services or allowances. Vendor shall submit all required forms pertaining to its compliance with the CBE participation goal, as applicable. Failure by Vendor to submit the required forms may result in the rejection of Vendor’s solicitation submittal prior to the award or failure to comply with the contract requirements may have an impact on the vendor performance evaluation post award, as applicable.
- C. CBE Program Requirements: Compliance with CBE participation goal requirements is a matter of responsibility; Vendor should submit all required forms and information with its solicitation submittal. If the required forms and information are not provided with the Vendor’s solicitation submittal, then Vendor must supply the required forms and information no later than three (3) business days after request by OESBD. Vendor may be deemed non-responsible for failure to fully comply with CBE Program Requirements within these stated timeframes.
1. Vendor should include in its solicitation submittal a **Letter Of Intent Between Bidder/Offeror and County Business Enterprise (CBE) Subcontractor/Supplier** for each CBE firm the Vendor intends to use to achieve the assigned CBE participation goal. The form is available at the following link:  
<http://www.broward.org/EconDev/Documents/CBELetterOfIntent.pdf>
  2. If Vendor is unable to attain the CBE participation goal, Vendor should include in its solicitation submittal an **Application for Evaluation of Good Faith Efforts** and all of the required supporting information. The form is available at the following link:  
<http://www.broward.org/EconDev/WhatWeDo/Documents/GoodFaithEffortEval.pdf>
- D. OESBD maintains an online directory of CBE firms. The online directory is available for use by Vendors at <https://webapps4.broward.org/smallbusiness/sbdirectory.aspx>.
- E. For detailed information regarding the CBE Program contact the OESBD at (954) 357-6400 or visit the website at: <http://www.broward.org/EconDev/SmallBusiness/>
- F. If awarded the contract, Vendor agrees to and shall comply with all applicable requirements of the Business Opportunity Act and the CBE Program in the award and administration of the contract.
1. No party to this contract may discriminate on the basis of race, color, sex, religion,

national origin, disability, age, marital status, political affiliation, sexual orientation, pregnancy, or gender identity and expression in the performance of this contract.

2. All entities that seek to conduct business with the County, including Vendor or any Prime Contractors, Subcontractors, and Bidders, shall conduct such business activities in a fair and reasonable manner, free from fraud, coercion, collusion, intimidation, or bad faith. Failure to do so may result in the cancellation of this solicitation, cessation of contract negotiations, revocation of CBE certification, and suspension or debarment from future contracts.
3. If Vendor fails to meet or make Good Faith Efforts (as defined in the Business Opportunity Act) to meet the CBE participation commitment (the "Commitment"), then Vendor shall pay the County liquidated damages in an amount equal to fifty percent (50%) of the actual dollar amount by which Vendor failed to achieve the Commitment, up to a maximum amount of ten percent (10%) of the total contract amount, excluding costs and reimbursable expenses. An example of this calculation is stated in Section 1-81.7, Broward County Code of Ordinances.
4. Vendor shall comply with all applicable requirements of the Business Opportunity Act in the award of this contract. Failure by Vendor to carry out any of these requirements shall constitute a material breach of the contract, which shall permit the County to terminate this contract or to exercise any other remedy provided under this contract, the Broward County Code of Ordinances, the Broward County Administrative Code, or other applicable laws, with all such remedies being cumulative.
5. Vendor shall pay its CBE subcontractors and suppliers, within fifteen (15) days following receipt of payment from the County, for all completed subcontracted work and supplies. If Vendor withholds an amount from CBE subcontractors or suppliers as retainage, such retainage shall be released and paid within fifteen (15) days following receipt of payment of retained amounts from the County.
6. Vendor understands that the County will monitor Vendor's compliance with the CBE Program requirements. Vendor must provide OESBD with a Monthly Utilization Report (MUR) to confirm its compliance with the Commitment agreed to in the contract; timely submission of the MUR every month throughout the term of the contract, including amendment and extension terms, is a condition precedent to the County's payment of Vendor under the contract.

Supplier: **ARCADIS**

**AFFILIATED ENTITIES OF THE PRINCIPAL(S) CERTIFICATION FORM**

The completed form should be submitted with the solicitation response but must be submitted within three business days of County's request. Vendor may be deemed non-responsive for failure to fully comply within stated timeframes.

- a. All Vendors are required to disclose the names and addresses of "affiliated entities" of the Vendor's principal(s) over the last five (5) years (from the solicitation opening deadline) that have acted as a prime Vendor with the County.
- b. The County will review all affiliated entities of the Vendor's principal(s) for contract performance evaluations and the compliance history with the County's Small Business Program, including CBE, DBE and SBE goal attainment requirements. "Affiliated entities" of the principal(s) are those entities related to the Vendor by the sharing of stock or other means of control, including but not limited to a subsidiary, parent or sibling entity.
- c. The County will consider the contract performance evaluations and the compliance history of the affiliated entities of the Vendor's principals in its review and determination of responsibility.

The Vendor hereby certifies that: (select one)

- No principal of the proposing Vendor has prior affiliations that meet the criteria defined as "Affiliated entities"
- Principal(s) listed below have prior affiliations that meet the criteria defined as "Affiliated entities"

Principal's Name:

Names of Affiliated Entities:

Principal's Name:

Names of Affiliated Entities:

Principal's Name:

Names of Affiliated Entities:

Authorized Signature Name: **Leah Torres, PE**

Title: **Assoc. VP**

Vendor Name: **Arcadis U.S., Inc.**

Date: **7/5/2018**

**Supplier: ARCADIS**

**LITIGATION HISTORY FORM**

The completed form(s) should be returned with the Vendor's submittal. If not provided with submittal, the Vendor must submit within three business days of County's request. Vendor may be deemed non-responsive for failure to fully comply within stated timeframes.

- There are no material cases for this Vendor; or
- Material Case(s) are disclosed below:

Is this for a: (check type) <input type="checkbox"/> Parent, <input type="checkbox"/> Subsidiary, or <input type="checkbox"/> Predecessor Firm?  Party	If Yes, name of Parent/Subsidiary/Predecessor:
	Or No <input checked="" type="checkbox"/>
Case Number, Name, and Date Filed	<b>See summary attached in proposal.</b>
Name of Court or other tribunal	
Type of Case	Bankruptcy <input type="checkbox"/> Civil <input type="checkbox"/> Criminal <input type="checkbox"/> Administrative/Regulatory <input type="checkbox"/>
Claim or Cause of Action and Brief description of each Count	
Brief description of the Subject Matter and Project Involved	
Disposition of Case  (Attach copy of any applicable Judgment, Settlement Agreement and Satisfaction of Judgment.)	Pending <input type="checkbox"/> Settled <input type="checkbox"/> Dismissed <input type="checkbox"/>  Judgment Vendor's Favor <input type="checkbox"/> Judgment Against Vendor <input type="checkbox"/>  If Judgment Against, is Judgment Satisfied? <input type="checkbox"/> Yes <input type="checkbox"/> No
Opposing Counsel	Name: Email: Telephone Number:

**Vendor Name: Arcadis U.S., Inc.**

Supplier: **ARCADIS**

## **SUBCONTRACTORS/SUBCONSULTANTS/SUPPLIERS REQUIREMENT FORM** **Request for Proposals, Request for Qualifications, or Request for Letters of Interest**

The following forms and supporting information (if applicable) should be returned with Vendor's submittal. If not provided with submittal, the Vendor must submit within three business days of County's request. Failure to timely submit may affect Vendor's evaluation.

- A. The Vendor shall submit a listing of all subcontractors, subconsultants and major material suppliers (firms), if any, and the portion of the contract they will perform. A major material supplier is considered any firm that provides construction material for construction contracts, or commodities for service contracts in excess of \$50,000, to the Vendor.
- B. If participation goals apply to the contract, only non-certified firms shall be identified on the form. A non-certified firm is a firm that is not listed as a firm for attainment of participation goals (ex. County Business Enterprise or Disadvantaged Business Enterprise), if applicable to the solicitation.
- C. This list shall be kept up-to-date for the duration of the contract. If subcontractors, subconsultants or suppliers are stated, this does not relieve the Vendor from the prime responsibility of full and complete satisfactory performance under any awarded contract.
- D. After completion of the contract/final payment, the Vendor shall certify the final list of non-certified subcontractors, subconsultants, and suppliers that performed or provided services to the County for the referenced contract.
- E. The Vendor has confirmed that none of the recommended subcontractors, subconsultants, or suppliers' principal(s), officer(s), affiliate(s) or any other related companies have been debarred from doing business with Broward County or any other governmental agency.

If none, state "none" on this form. Use additional sheets as needed. Vendor should scan and upload any additional form(s) in BidSync.

1. Subcontracted Firm's Name: **COMPLETED LIST WILL BE INCLUDED WITH BID OFFER**

Subcontracted Firm's Address:

Subcontracted Firm's Telephone Number:

Contact Person's Name and Position:

Contact Person's E-Mail Address:

Estimated Subcontract/Supplies Contract Amount:

Type of Work/Supplies Provided:

2. Subcontracted Firm's Name:

Subcontracted Firm's Address:

Subcontracted Firm's Telephone Number:

Contact Person's Name and Position:

Contact Person's E-Mail Address:

Supplier: **ARCADIS**

**LOBBYIST REGISTRATION REQUIREMENT CERTIFICATION FORM**

The completed form should be submitted with the solicitation response but must be submitted within three business days of County's request. Vendor may be deemed non-responsive for failure to fully comply within stated timeframes.

The Vendor certifies that it understands if it has retained a lobbyist(s) to lobby in connection with a competitive solicitation, it shall be deemed non-responsive unless the firm, in responding to the competitive solicitation, certifies that each lobbyist retained has timely filed the registration or amended registration required under Broward County Lobbyist Registration Act, Section 1-262, Broward County Code of Ordinances; and it understands that if, after awarding a contract in connection with the solicitation, the County learns that the certification was erroneous, and upon investigation determines that the error was willful or intentional on the part of the Vendor, the County may, on that basis, exercise any contractual right to terminate the contract for convenience.

The Vendor hereby certifies that: (select one)

- It has not retained a lobbyist(s) to lobby in connection with this competitive solicitation; however, if retained after the solicitation, the County will be notified.
- It has retained a lobbyist(s) to lobby in connection with this competitive solicitation and certified that each lobbyist retained has timely filed the registration or amended registration required under Broward County Lobbyist Registration Act, Section 1-262, Broward County Code of Ordinances.

It is a requirement of this solicitation that the names of any and all lobbyists retained to lobby in connection with this solicitation be listed below:

Name of Lobbyist:

Lobbyist's Firm:

Phone:

E-mail:

Name of Lobbyist:

Lobbyist's Firm:

Phone:

E-mail:

**Authorized Signature/Name: Leah Torres Date: 5/14/2018**

**Title: Assoc. VP**

**Vendor Name: Arcadis U.S., Inc.**

**Supplier: ARCADIS**

**AGREEMENT EXCEPTION FORM**

The completed form(s) should be returned with the Vendor's submittal. If not provided with submittal, it shall be deemed an affirmation by the Vendor that it accepts the terms and conditions of the County's Agreement as disclosed in the solicitation.

The Vendor must either provide specific proposed alternative language on the form below. Additionally, a brief justification specifically addressing each provision to which an exception is taken should be provided.

- There are no exceptions to the terms and conditions of the County Agreement as referenced in the solicitation; or
- The following exceptions are disclosed below: (use additional forms as needed; separate each Article/ Section number)

Term or Condition Article / Section	Insert version of exception or specific proposed alternative language	Provide brief justification for change
Liquidated Damages	Please delete this entire section.	We do not believe a liquidated damages clause is appropriate given the anticipated scope of professional services. We respectfully request that this clause be removed as not applicable to this type of Agreement and the nature of services anticipated.

**Vendor Name:** Arcadis U.S., Inc.

Supplier: **ARCADIS**

### **RFP-RFQ-RLI LOCATION ATTESTATION FORM (EVALUATION CRITERIA)**

The completed and signed form and supporting information (if applicable, for Joint Ventures) should be returned with the Vendor's submittal. If not provided with submittal, the Vendor must submit within three business days of County's request. Failure to timely submit this form and supporting information may affect the Vendor's evaluation. Provided information is subject to verification by the County.

A Vendor's principal place of business location (also known as the nerve center) within Broward County is considered in accordance with Evaluation Criteria. The County's definition of a principal place of business is:

1. As defined by the Broward County Local Preference Ordinance, "Principal place of business means the nerve center or center of overall direction, control and coordination of the activities of the bidder [Vendor]. If the bidder has only one (1) business location, such business location shall be considered its principal place of business."
2. A principal place of business refers to the place where a corporation's officers direct, control, and coordinate the corporation's day-to-day activities. It is the corporation's 'nerve center' and in practice it should normally be the place where the corporation maintains its headquarters; provided that the headquarters is the actual center of direction, control, and coordination, i.e., the 'nerve center', and not simply an office where the corporation holds its board meetings (for example, attended by directors and officers who have traveled there for the occasion).

The Vendor's principal place of business in Broward County shall be the Vendor's "Principal Address" as indicated with the Florida Department of State Division of Corporations, for at least six months prior to the solicitation's due date.

Check one of the following:

- The Vendor certifies that it has a principal place of business location (also known as the nerve center) within Broward County, as documented in Florida Department of State Division of Corporations (Sunbiz), and attests to the following statements:

1. Vendor's address listed in its submittal is its principal place of business as defined by Broward County;
2. Vendor's "Principal Address" listed with the Florida Department of State Division of Corporations is the same as the address listed in its submittal and the address was listed for at least six months prior to the solicitation's opening date. A copy of Florida Department of State Division of Corporations (Sunbiz) is attached as verification.
3. Vendor must be located at the listed "nerve center" address ("Principal Address") for at least six (6) months prior to the solicitation's opening date;
4. Vendor has not merged with another firm within the last six months that is not headquartered in Broward County and is not a wholly owned subsidiary or a holding company of another firm that is not headquartered in Broward County;
5. If awarded a contract, it is the intent of the Vendor to remain at the referenced address for the duration of the contract term, including any renewals, extensions or any approved



interim contracts for the services provided under this contract; and

- 6. The Vendor understands that if after contract award, the County learns that the attestation was erroneous, and upon investigation determines that the error was willful or intentional on the part of the Vendor, the County may, on that basis exercise any contractual right to terminate the contract. Further any misleading, inaccurate, false information or documentation submitted by any party affiliated with this procurement may lead to suspension and/or debarment from doing business with Broward County as outlined in the Procurement Code, Section 21.119.

If the Vendor is submitting a response as a Joint Venture, the following information is required to be submitted:

- a. Name of the Joint Venture Partnership
- b. Percentage of Equity for all Joint Venture Partners
- c. A copy of the executed Agreement(s) between the Joint Venture Partners

Vendor does not have a principal place of business location (also known as the nerve center) within Broward County.

**Vendor Information:**

Vendor Name: **Arcadis U.S., Inc.**

Vendor's address listed in its submittal is:

**8201 Peters Road, Suite 2400  
Plantation, Florida 33324**

**Our headquarters is located in Highlands Ranch, CO**

The signature below must be by an individual authorized to bind the Vendor. The signature below is an attestation that all information listed above and provided to Broward County is true and accurate.

<b>Leah Torres, PE</b>	<b>Assoc. VP</b>	<b>Arcadis U.S., Inc.</b>	<b>7/5/2018</b>
Authorized Signature/Name	Title	Vendor Name	Date

**Supplier: ARCADIS**

**RFP-RLI-RFQ LOCAL PREFERENCE AND TIE BREAKER CERTIFICATION FORM**

The completed and signed form should be returned with the Vendor's submittal to determine Local Preference eligibility, however it must be returned at time of solicitation submittal to qualify for the Tie Break criteria. If not provided with submittal, the Vendor must submit within three business days of County's request for evaluation of Local Preference. Proof of a local business tax should be submitted with this form. Failure to timely submit this form or local business tax receipt may render the business ineligible for application of the Local Preference or Tie Break Criteria.

In accordance with Section 21.31.d. of the Broward County Procurement Code, to qualify for the Tie Break Criteria, the undersigned Vendor hereby certifies that (check box if applicable):

- The Vendor is a local Vendor in Broward County and:
  - a. has a valid Broward County local business tax receipt;
  - b. has been in existence for at least six-months prior to the solicitation opening;
  - c. at a business address physically located within Broward County;
  - d. in an area zoned for such business;
  - e. provides services from this location on a day-to-day basis, and
  - f. services provided from this location are a substantial component of the services offered in the Vendor's proposal.

In accordance with Local Preference, Section 1-74, et. seq., Broward County Code of Ordinances, a local business meeting the below requirements is eligible for Local Preference. To qualify for the Local Preference, the undersigned Vendor hereby certifies that (check box if applicable):

- The Vendor is a local Vendor in Broward and:
  - a. has a valid Broward County local business tax receipt issued at least one year prior to solicitation opening;
  - b. has been in existence for at least one-year prior to the solicitation opening;
  - c. provides services on a day-to-day basis, at a business address physically located within the Broward County limits in an area zoned for such business; and
  - d. the services provided from this location are a substantial component of the services offered in the Vendor's proposal.

Local Business Address: **8201 Peters Road, Suite 2400  
Plantation, FL 33324**

Vendor does not qualify for Tie Break Criteria or Local Preference, in accordance with the above requirements. The undersigned Vendor hereby certifies that (check box if applica): The Vendor is not a local Vendor in Broward County.

<b>Leah Torres, PE</b>	<b>Associate VP</b>	<b>Arcadis U.S., Inc.</b>	<b>7/5/2018</b>
<b>AUTHORIZED SIGNATURE/NAME</b>	<b>TITLE</b>	<b>COMPANY</b>	<b>DATE</b>

**Supplier: ARCADIS**

**DOMESTIC PARTNERSHIP ACT CERTIFICATION FORM (REQUIREMENT AND TIEBREAKER)**

Refer to Special Instructions to identify if Domestic Partnership Act is a requirement of the solicitation or acts only as a tiebreaker. If Domestic Partnership is a requirement of the solicitation, the completed and signed form should be returned with the Vendor's submittal. If the form is not provided with submittal, the Vendor must submit within three business days of County's request. Vendor may be deemed non-responsive for failure to fully comply within stated timeframes. To qualify for the Domestic Partnership tiebreaker criterion, the Vendor must currently offer the Domestic Partnership benefit and the completed and signed form must be returned at time of solicitation submittal.

The Domestic Partnership Act, Section 16 ½ -157, Broward County Code of Ordinances, requires all Vendors contracting with the County, in an amount over \$100,000 provide benefits to Domestic Partners of its employees, on the same basis as it provides benefits to employees' spouses, with certain exceptions as provided by the Ordinance.

For all submittals over \$100,000.00, the Vendor, by virtue of the signature below, certifies that it is aware of the requirements of Broward County's Domestic Partnership Act, Section 16-½ -157, Broward County Code of Ordinances; and certifies the following: (check only one below).

- 1. The Vendor currently complies with the requirements of the County's Domestic Partnership Act and provides benefits to Domestic Partners of its employees on the same basis as it provides benefits to employees' spouses
- 2. The Vendor will comply with the requirements of the County's Domestic Partnership Act at time of contract award and provide benefits to Domestic Partners of its employees on the same basis as it provides benefits to employees' spouses.
- 3. The Vendor will not comply with the requirements of the County's Domestic Partnership Act at time of award.
- 4. The Vendor does not need to comply with the requirements of the County's Domestic Partnership Act at time of award because the following exception(s) applies: (check only one below).
  - The Vendor is a governmental entity, not-for-profit corporation, or charitable organization.
  - The Vendor is a religious organization, association, society, or non-profit charitable or educational institution.
  - The Vendor provides an employee the cash equivalent of benefits. (Attach an affidavit in compliance with the Act stating the efforts taken to provide such benefits and the amount of the cash equivalent).
  - The Vendor cannot comply with the provisions of the Domestic Partnership Act because it would violate the laws, rules or regulations of federal or state law or would violate or be inconsistent with the terms or conditions of a grant or contract with the United States or State of Florida. Indicate the law, statute or regulation (State the law, statute or regulation and attach explanation of its applicability).

**Leah Torres**  
**Authorized Signature/Name**

**Assoc. VP**  
**Title**

**Arcadis U.S., Inc.**  
**Vendor Name**

**7/5/2018**  
**Date**

**Supplier: ARCADIS**

**VOLUME OF PREVIOUS WORK ATTESTATION FORM**

The completed and signed form should be returned with the Vendor's submittal. If not provided with submittal, the Vendor must submit within three business days of County's request. Failure to provide timely may affect the Vendor's evaluation. This completed form must be included with the Vendor's submittal at the time of the opening deadline to be considered for a Tie Breaker criterion (if applicable).

The calculation for Volume of Previous Work is all amounts paid to the prime Vendor by Broward County Board of County Commissioners at the time of the solicitation opening date within a five-year timeframe. The calculation of Volume of Previous Work for a prime Vendor previously awarded a contract as a member of a Joint Venture firm is based on the actual equity ownership of the Joint Venture firm.

In accordance with Section 21.31.d. of the Broward County Procurement Code, the Vendor with the lowest dollar volume of work previously paid by the County over a five-year period from the date of the submittal opening will receive the Tie Breaker.

Vendor must list all projects it received payment from Broward County Board of County Commissioners during the past five years. If the Vendor is submitting as a joint venture, the information provided should encompass the joint venture and each of the entities forming the joint venture. The Vendor attests to the following:

Item No.	Project Title	Solicitation/ Contract Number:	Department or Division	Date Awarded	Paid to Date Dollar Amount
1	Litigation Consulting Services	Not Applicable	Broward County Waste and Recycling Services	9/26/2013	\$50,000.00
2	Solid Waste & Recycling Issues Study	R2113804P1	Broward County	10/24/2017	99,303.29
3					
4					
5					
<b>Grand Total</b>					<b>\$149,303.29</b>

Has the Vendor been a member/partner of a Joint Venture firm that was awarded a contract by the County? Yes  No

If Yes, Vendor must submit a **Joint Vendor Volume of Work Attestation Form**.

**Vendor Name: Arcadis U.S., Inc.**

**Leah Torres, PE**  
**Authorized Signature/ Name**

**Assoc. VP**  
**Title**

**7/5/2018**  
**Date**

**VOLUME OF PREVIOUS WORK ATTESTATION JOINT VENTURE FORM**

If applicable, this form and additional required documentation should be submitted with the Vendor's submittal. If not provided with submittal, the Vendor must submit within three business days of County's request. Failure to timely submit this form and supporting documentation may affect the Vendor's evaluation.

The calculation of Volume of Previous Work for a prime Vendor previously awarded a contract as a member of a Joint Venture firm is based on the actual equity ownership of the Joint Venture firm. Volume of Previous Work is not based on the total payments to the Joint Venture firm.

Vendor must list all projects it received payment from Broward County Board of County Commissioners during the past five years as a member of a Joint Venture. The Vendor attests to the following:

Item No.	Project Title	Solicitation/ Contract Number:	Department or Division	Date Awarded	JV Equity %	Paid to Date Dollar Amount
1						
2						
3						
4						
5						
<b>Grand Total</b>						

Vendor is required to submit an executed Joint Venture agreement(s) and any amendments for each project listed above. Each agreement must be executed prior to the opening date of this solicitation.

**Vendor Name: Arcadis U.S., Inc.**

**Leah Torres, PE**  
**Authorized Signature/ Name**

**Associate VP**  
**Title**

**7/13/2018**  
**Date**

Supplier: **ARCADIS**

## STANDARD CERTIFICATIONS

### Request for Proposals, Request for Qualifications, or Request for Letters of Interest

Vendor should complete and acknowledge the standard certifications and submit with the solicitation response. If not submitted with solicitation response, it must be submitted within three business days of County's request. Failure to timely submit may affect Vendor's evaluation. It is imperative that the person completing the standard certifications be knowledgeable about the proposing Vendor's business and operations.

#### **Cone of Silence Requirement Certification:**

The Cone of Silence Ordinance, Section 1-266, Broward County Code of Ordinances prohibits certain communications among Vendors, Commissioners, County staff, and Selection or Evaluation Committee members. Identify on a separate sheet any violations of this Ordinance by any members of the responding firm or its joint ventures. After the application of the Cone of Silence, inquiries regarding this solicitation should be directed to the Director of Purchasing or designee. The Cone of Silence terminates when the County Commission or other awarding authority takes action which ends the solicitation.

The Vendor hereby certifies that: (check each box)

- The Vendor has read Cone of Silence Ordinance, Section 1-266, Broward County Code of Ordinances; and
- The Vendor understands that the Cone of Silence for this competitive solicitation shall be in effect beginning upon the appointment of the Selection or Evaluation Committee, for communication regarding this solicitation with the County Administrator, Deputy County Administrator, Assistant County Administrators, and Assistants to the County Administrator and their respective support staff or any person, including Evaluation or Selection Committee members, appointed to evaluate or recommend selection in this RFP/RLI process. For Communication with County Commissioners and Commission staff, the Cone of Silence allows communication until the initial Evaluation or Selection Committee Meeting.
- The Vendor agrees to comply with the requirements of the Cone of Silence Ordinance.

#### **Drug-Free Workplace Requirements Certification:**

Section 21.31.a. of the Broward County Procurement Code requires awards of all competitive solicitations requiring Board award be made only to firms certifying the establishment of a drug free workplace program. The program must consist of:

1. Publishing a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the offeror's workplace, and specifying the actions that will be taken against employees for violations of such prohibition;
2. Establishing a continuing drug-free awareness program to inform its employees about:
  - a. The dangers of drug abuse in the workplace;
  - b. The offeror's policy of maintaining a drug-free workplace;
  - c. Any available drug counseling, rehabilitation, and employee assistance programs; and
  - d. The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
3. Giving all employees engaged in performance of the contract a copy of the statement

required by subparagraph 1;

4. Notifying all employees, in writing, of the statement required by subparagraph 1, that as a condition of employment on a covered contract, the employee shall:
  - a. Abide by the terms of the statement; and
  - b. Notify the employer in writing of the employee's conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or of any state, for a violation occurring in the workplace NO later than five days after such conviction.
5. Notifying Broward County government in writing within 10 calendar days after receiving notice under subdivision 4.b above, from an employee or otherwise receiving actual notice of such conviction. The notice shall include the position title of the employee;
6. Within 30 calendar days after receiving notice under subparagraph 4 of a conviction, taking one of the following actions with respect to an employee who is convicted of a drug abuse violation occurring in the workplace:
  - a. Taking appropriate personnel action against such employee, up to and including termination; or
  - b. Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a federal, state, or local health, law enforcement, or other appropriate agency; and
7. Making a good faith effort to maintain a drug-free workplace program through implementation of subparagraphs 1 through 6.

The Vendor hereby certifies that: (check box)

- The Vendor certifies that it has established a drug free workplace program in accordance with the above requirements.

**Non-Collusion Certification:**

Vendor shall disclose, to their best knowledge, any Broward County officer or employee, or any relative of any such officer or employee as defined in Section 112.3135 (1) (c), Florida Statutes, who is an officer or director of, or has a material interest in, the Vendor's business, who is in a position to influence this procurement. Any Broward County officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement. Failure of a Vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the Broward County Procurement Code.

The Vendor hereby certifies that: (select one)

- The Vendor certifies that this offer is made independently and free from collusion; or
- The Vendor is disclosing names of officers or employees who have a material interest in this procurement and is in a position to influence this procurement. Vendor must include a list of name(s), and relationship(s) with its submittal.



**Public Entities Crimes Certification:**

In accordance with Public Entity Crimes, Section 287.133, Florida Statutes, a person or affiliate placed on the convicted vendor list following a conviction for a public entity crime may not submit on a contract: to provide any goods or services; for construction or repair of a public building or public work; for leases of real property to a public entity; and may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in s. 287.017 for Category Two for a period of 36 months following the date of being placed on the convicted vendor list.

The Vendor hereby certifies that: (check box)

- The Vendor certifies that no person or affiliates of the Vendor are currently on the convicted vendor list and/or has not been found to commit a public entity crime, as described in the statutes.

**Scrutinized Companies List Certification:**

Any company, principals, or owners on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or the Scrutinized Companies that Boycott Israel List is prohibited from submitting a response to a solicitation for goods or services in an amount equal to or greater than \$1 million.

The Vendor hereby certifies that: (check each box)

- The Vendor, owners, or principals are aware of the requirements of Sections 287.135, 215.473, and 215.4275, Florida Statutes, regarding Companies on the Scrutinized Companies with Activities in Sudan List the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or the Scrutinized Companies that Boycott Israel List; and
- The Vendor, owners, or principals, are eligible to participate in this solicitation and are not listed on either the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or the Scrutinized Companies that Boycott Israel List; and
- If awarded the Contract, the Vendor, owners, or principals will immediately notify the County in writing if any of its principals are placed on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or the Scrutinized Companies that Boycott Israel List.

I hereby certify the information provided in the Vendor Questionnaire and Standard Certifications:

**Leah Torres, PE**

\*AUTHORIZED SIGNATURE/NAME

**Associate VP**

TITLE

**7/5/2018**

DATE

Vendor Name: **Arcadis U.S., Inc.**

\* I certify that I am authorized to sign this solicitation response on behalf of the Vendor as indicated in Certificate as to Corporate Principal, designation letter by Director/Corporate Officer, or other business authorization to bind on behalf of the Vendor. As the Vendor's authorized representative, I attest that any and all statements, oral, written or otherwise, made in support of the Vendor's response, are accurate, true and correct. I also acknowledge that inaccurate, untruthful, or incorrect statements made in support of the Vendor's response may be used by the County as a basis for rejection, rescission of the award, or termination of the contract and may also serve as the basis for debarment of Vendor pursuant to Section 21.119 of the Broward County Procurement Code. I certify that the Vendor's response is made without prior understanding, agreement, or connection with any corporation, firm or person submitting a response for the same items/services, and is in all respects fair and without collusion or fraud. I also certify that the Vendor agrees to abide by all terms and

conditions of this solicitation, acknowledge and accept all of the solicitation pages as well as any special instructions sheet(s).