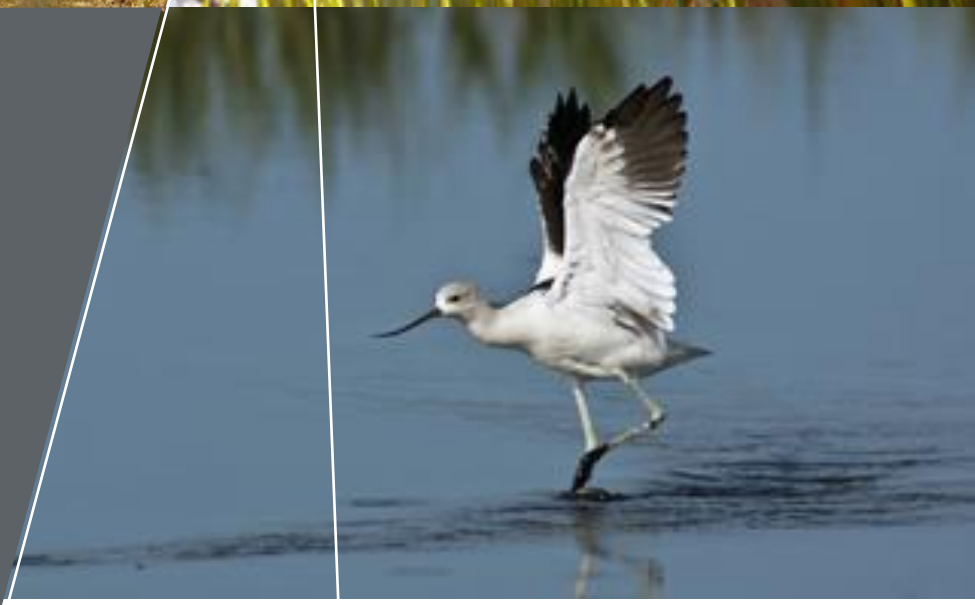
Item 7

Regional Water Supply Plan Update – Consultant Selection

Exhibits – Statements of Qualifications:

WRWSA Regional Water Supply Plan Update

Statement of Qualifications



ORIGINAL

Prepared for

Withlacoochee Regional Water Supply Authority

January 26, 2018

Cardno

TRANSMITTAL

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January 26, 2018

Mr. Richard Owen, AICP
Executive Director
Withlacoochee Regional Water Supply Authority
3600 W Sovereign Path, Suite 228
Lecanto, Florida 34461
Tel. 352.527.5795

Subject: SOQ for Withlacoochee Regional Water Supply Authority (WRWSA) Regional Water Supply Plan Update

Dear Mr. Owen:

Cardno, Inc. (Cardno) is pleased to submit our response for the above-referenced RFQ. This package is compliant with your requirements, and includes six paper copies and six electronic copies for evaluation. For this contract, Cardno in partnership with Jones Edmunds and Associates, has again assembled an exceptional team of engineers, hydrogeologists, and environmental scientists with the necessary experience and accessibility to meet the needs of WRWSA and your stakeholders. We believe the enclosed statement of qualifications effectively demonstrates our ability to provide the right technical expertise and relevant project history for a thorough understanding and strong project approach; proven leadership, staff accessibility and availability to meet any schedule and budget; in addition to providing a strong list of references who will speak to Cardno's high level of service and keen focus on safety. Should you have any questions regarding our team's qualifications or require additional information following your review, please do not hesitate to contact Program Manager Gregg Jones, PhD, PG, with the information provided below. For ease of review, we have structured our team's response in the order as outlined on the following page. We appreciate this opportunity to submit our qualifications and we are eager to work with the WRWSA again.

Sincerely,
Cardno, Inc.

Gregg Jones, PhD, PG
Program Manager / Technical Director – Water Resources
Tel. 813.367.0989
gregg.jones@cardno.com

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1.0 Introduction to Cardno Team

Unparalleled Local Experience and Expertise

In response to the Withlacoochee Regional Water Supply Authority's (WRWSA) request for Statement of Qualifications to update its Regional Water Supply Plan, Cardno has assembled an exceptional team of engineers, hydrogeologists, and environmental scientists with the necessary experience and accessibility. Value-added benefits for the WRWSA in selecting our team for this contract include:

Cardno offers nearly 40 years of Florida water supply planning, environmental and engineering expertise. Today, we have 17 Cardno offices and more than 300 staff across the state to serve the WRWSA.

- Seamless leadership, coordination, and no learning curve with direct oversight by Project Officer Gregg Jones, PhD, PG, who supported development of the WRWSA's 2014 RWSP update;
- Extensive experience working for the WRWSA and member governments on water supply related projects;
- Long-term relationships with the water supply planning staff of the Southwest and St. Johns River Water Management Districts; and
- Decades of experience developing a technical understanding of major water resources in the WRWSA service area, such as the Floridan aquifer and rivers and springs, and how their established minimum flows and levels constrain development of water supplies in the region.

The Cardno Team offers a comprehensive understanding of the water supply challenges that may arise during the 2020-2040 planning period and we will work tirelessly to develop innovative, cost-effective solutions to help resolve any challenges. Per the WRWSA's request in the SOQ, we have summarized in Table 1.1 below our contract information. In the subsequent pages, we present our team qualifications, goals and objectives, project approach, and client reference information. We are confident that the expertise, experience, and relationships we have developed through our work with the WRWSA, its members, the water management districts and numerous other clients on similar work will allow us to provide superior services and products in a shorter time frame.

Table 1.1 Required Contract Information

Corporate Information	
Legal Name	Cardno, Inc. (Cardno)
Address	3905 Crescent Park Drive, Riverview Florida 33578
Phone	813.367.0989
Email	gregg.jones@cardno.com
Principal Location(s)	Riverview, Tampa, Gainesville
Legal Form of Company	Cardno, Inc. – Corporation State of Incorporation – Delaware (2007) FEIN 45-2663666
Project Officer	Gregg Jones, PhD, PG / Water Resources Technical Director and Vice President

A Team of Proven Partners and Technical Leadership

Cardno is a provider of professional services in physical and social infrastructure. With over 175 staff in Florida and more than 6,000 worldwide, Cardno offers the depth and breadth of resources to meet all of your needs. Cardno includes leading professionals who plan, design, manage, and deliver sustainable projects and community programs. Our key areas of specialization include environmental consulting and engineering; groundwater and surface water management; MFLs support; geological services; ecological consulting and restoration; land development; and industrial hygiene. Cardno services clients in the water industry, energy and power, financial and insurance, legal, mining and industrial, manufacturing, real estate, and oil and gas sectors.

With our 75-year history, the WRWSA can benefit from proven processes in cost control, schedule control, and quality control. Clients turn to Cardno for assistance in navigating complex environmental challenges because of our reputation for integrity, responsiveness, and innovation. Our clients benefit from the wealth of knowledge and experience of our multi-disciplinary team of environmental professionals. Cardno senior staff and management are highly regarded and respected throughout private and public sectors for their technical expertise, science-based approach, and ability to provide sustainable business solutions. Cardno currently ranks 55th on *Engineering News-Record's* Top Environmental Firms and 8th on *ENR's* Top Florida Design Firms.

Cardno and Jones Edmunds together, have been at the forefront of water supply planning and alternative water supply project development in Florida for four of the State's water management districts. Our expertise includes:

- *Development of water demand projections,*
- *Quantifying viable alternatives such as conservation and reuse,*
- *Identifying and evaluating alternative sources,*
- *Evaluating how MFLs effect the feasibility of alternative source options,*
- *Assessing permittability of project options, and*
- *Financing and governance.*

Cardno's role in the project will be oversight of population/water demand forecasting; water conservation and reuse evaluation; groundwater availability analysis, and modeling; alternative water supply project option identification, meeting facilitation, agency outreach, and governance issues. Cardno has relationships with respected legal and financial experts with proven expertise and experience in developing solutions to governance issues for water supply authorities. Depending on the level of detail desired by the WRWSA, we can bring in these experts to provide additional expertise and consulting services.

Jones Edmunds & Associates, Inc. is a Florida-based, multi-disciplinary engineering corporation firm that has been providing quality consulting services to public and private entities in Florida since 1974. Jones Edmunds offers comprehensive water resources services that focus on water supply, water quality, flood protection, and natural systems management. Jones Edmunds' role for the project will be identification and investigation of the feasibility of alternative water supply project options including associated economics, engineering, permitting, design, and cost estimation. Staff supplied by Jones Edmunds for the project will be coordinated and directed through the leadership, expertise, and accessibility of Cardno Project Officer Gregg Jones.

Jones Edmunds has a track record of understanding the challenges of alternative water supply projects and has successfully developed the infrastructure needed for reliable and sustainable water supply sources for communities throughout the state. They have been on the leading edge of assisting clients with reclaimed water projects, having designed numerous treatment systems for new water reclamation plants and for upgrades and retrofits to existing domestic wastewater treatment plants.

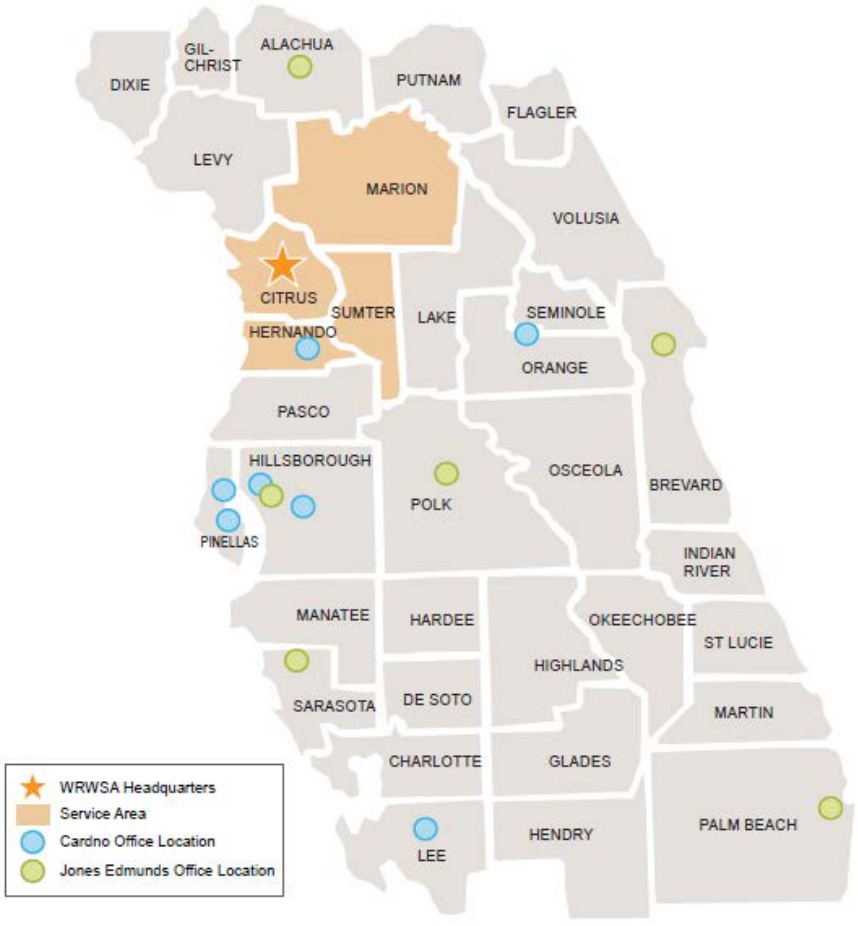


Figure 1. Cardno Team Proximity to WRWSA Service Area

2.0 Project Officer

Project success requires a multidisciplinary team of experienced professionals focused on producing high-quality deliverables. Just as important is a strong project officer who provides guidance to the technical team, fosters open client communication, and ensures timely, cost effective completion of deliverables. The Cardno Team's Project Officer, **Dr. Gregg Jones,** has decades of experience managing large teams of professionals engaged in technically and logistically demanding projects. His oversight of the WRWSA's water supply plan update will ensure that all work products will be of the highest quality and will be completed on time and within budget. He will manage the contract from Cardno's Riverview, Florida office.

Gregg Jones, PhD, PG
Cardno

Key Disciplines:

- Hydrogeology, Hydrology, Geochemistry
- Water Supply Plan Development
- Water Conservation and Reuse
- Aquifer Recharge and ASR
- Minimum Flows and Levels Establishment
- Flow and Water Quality of Springs

Assigned Office Location: Riverview, FL
Years of Experience: 32

Gregg Jones, PhD, PG, has 32 years of experience in a wide range of water resource disciplines including hydrogeology, hydrology, and geochemistry. Dr. Jones is highly qualified in all aspects of water supply planning including demand forecasting, safe yield determinations of aquifer systems, water conservation and reclaimed water master planning, development of MFLs, assessment of the feasibility of alternative water source options, and development of innovative water supply concepts. He also has extensive experience in assessing the feasibility of ASR and aquifer recharge systems and in identifying and quantifying impacts to natural systems from excessive groundwater withdrawals.

Dr. Jones is a recognized karst and springs expert and has studied the water flow and quality of Florida's major springs throughout his career. Because he was well known for his work on Florida's springs, he was invited in 1999 to serve on Governor Bush's Florida Springs Task Force, a two-year effort to develop strategies and secure funding to protect and restore springs.

Dr. Jones was employed by the SWFWMD for 22 years. For the last nine years of his tenure there, he served as director of the Water Resource Assessment Department and was responsible for the MFLs program, groundwater modeling and hydrogeological investigations, regional monitor well construction program, regional water supply plan development, ASR program, and reclaimed water and conservation projects. In that role he also led a team of hydrogeologists, engineers, planners, and water conservation/water reuse specialists to produce the 2000 and 2005 RWSPs.

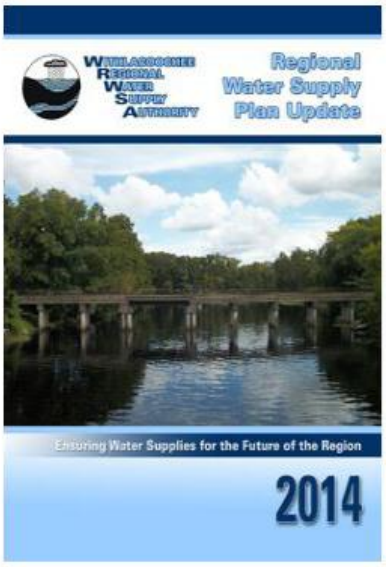
In addition to managing regional water supply planning at the SWFWMD, Dr. Jones has managed major water supply planning efforts for the SRWMD, NWFWMD, WRSWA, and agencies in other parts of the U.S. A description of water supply planning projects managed by Dr. Jones is summarized below.

- Southwest Florida Water Management District:
  - While employed at the District, directly supervised hydrogeologists, environmental scientists, and planners to develop the 2000 RWSP (1998-2000).
  - While employed at the District, directly supervised hydrogeologists, environmental scientists, and planners to develop the 2005 RWSPs for the Northern, Tampa Bay, Heartland, and Southern Planning Regions. (2004-2005).
  - After joining Cardno in 2007, continued to work with the District to assist with development of the 2010 RWSP (2009-2010).

- *Suwannee River Water Management District* - Developed water demand projections for all use sectors for a 20-year planning period and used groundwater modeling to evaluate how meeting these demands with groundwater would impact proposed and established MFLs for lakes, wetlands, streams, and springs *(2009-2011).*

- *Northwest North Dakota Water Supply Environmental Impact Statement* - Conducted water supply investigations for the U.S. Bureau of Reclamation to determine the 2060 water supply demands of northwest North Dakota communities and alternatives for supplying the needed water. Conducted water demand and population projections, water supply alternatives analysis, and a design for an aquifer recharge project that included a flow study of rivers and groundwater modeling of the aquifer to be recharged *(2011-2013).*

- *General Electric vs. the Saratoga County Water Authority, Saratoga County, New York* - As part of litigation over PCB contamination of the Hudson River, provided extensive analyses on the availability and quality of Hudson River water and the factors involved in determining the water supply withdrawal location and distribution system configuration. Provided expert witness testimony during a deposition (2013-2014).



Dr. Jones managed the team that developed the WRWSA's 2014 Water Supply Plan Update. The Plan was completed within the required timeframe and did not exceed the original budget.

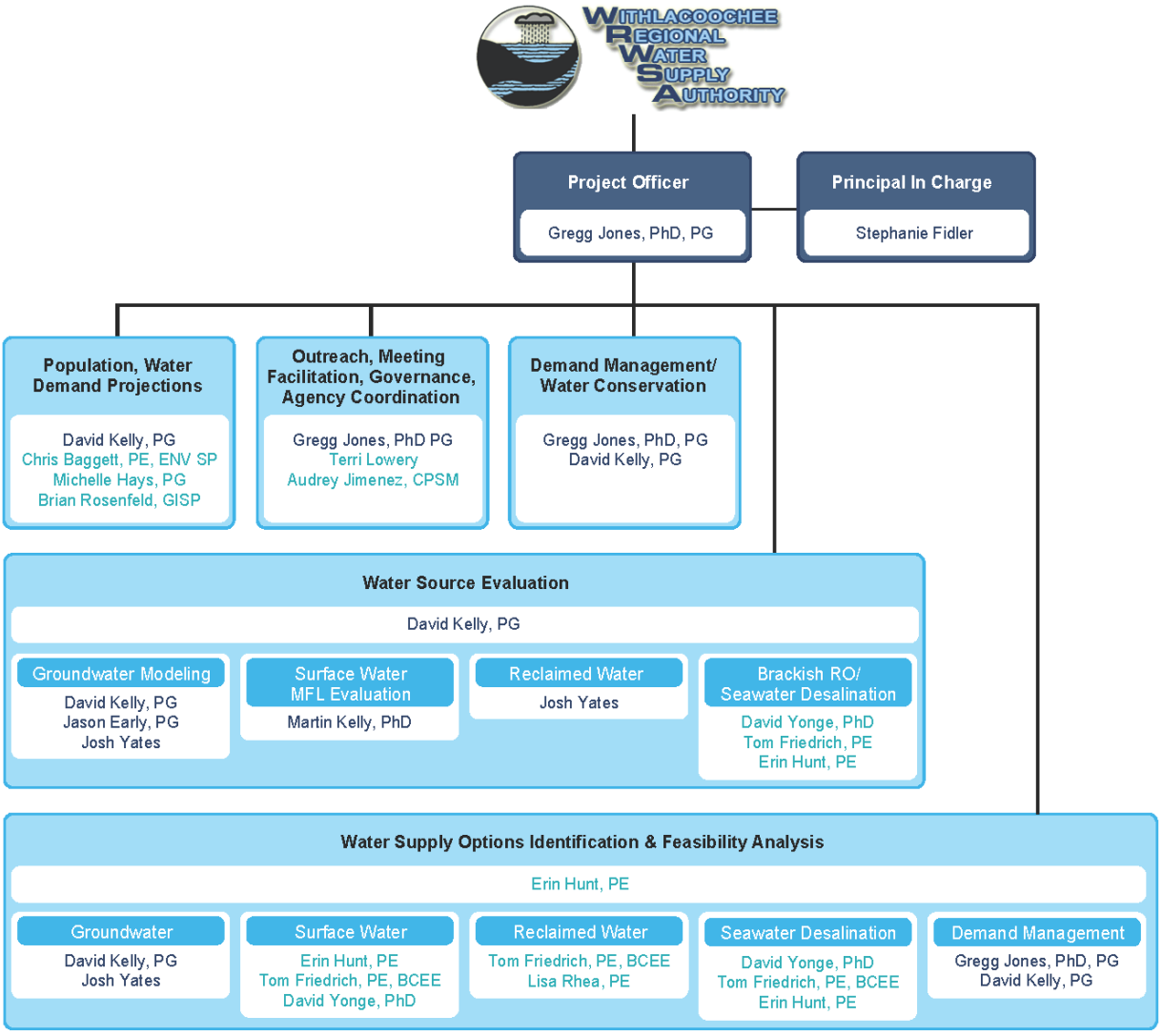
- *Withlacoochee Regional Water Supply Authority* – Managed the WRWSA's 2014 Water Supply Plan update which included 1) population and water demand projections, 2) assessment of the quantity of water to be conserved or made available through conservation, groundwater, and alternative sources, 3) modeling to delineate areas where Upper and Lower Floridan aquifer wellfields could be developed, 4) development of water supply options, 5) development of infrastructure, costs, customer bases, and permitting requirements for water supply options, and 6) a structure for ownership, governance, funding sources, and cost sharing for regionally developed projects *(2013-2014).*

- *Northwest Florida Water Management District* – Completing a five-year project to determine the water supply potential of the Upper Florida aquifer in the western Florida panhandle (2013-present).

3.0 Qualifications and Professional Experience of Other Key Personnel

Cardno has assembled an exceptional team of experienced engineers, hydrogeologists, hydrologists, and environmental scientists with the appropriate experience and accessibility. In addition to the expertise Cardno brings to this project, we have partnered with Jones Edmunds, Inc. to produce a team with unparalleled ability to meet and exceed the WRWSA's expectations for this project. Figure 2 shows the team organizational chart for this project. In the following pages, we highlight our key personnel's qualifications to conduct the project services required for this contract. Abbreviated resumes are also attached as Appendix A.

Figure 2. Proposed Organization Chart



Legend: *Cardno, Jones Edmunds & Associates*

Stephanie Fidler
Cardno
Key Disciplines:
- Project Management and Program Management
- Business Development
- NEPA Evaluations
- Wetland and Wildlife Permitting
- Permit Compliance
- Wetland Delineation/ Hydroperiod Determination
- Wetland Ecology & Assessment
- Wildlife Ecology
- Quality Assurance

Assigned Office Location: Riverview, FL
Years of Experience: 15

Ms. Stephanie Fidler has over 15 years of experience in environmental consulting and serves as the Southeastern Business Unit Leader at Cardno. Ms. Fidler supports client management and business development for a variety of Cardno's service lines including environmental permitting, environmental impact assessments, groundwater and surface water management, water supply, cultural resources, environmental restoration, and natural resource management. She builds relationships with key clients, industry organizations, teaming partners, and stakeholders to identify opportunities and grow the business for Cardno. She has over 12 years of experience at acquiring and maintaining satisfied clients at local, regional, and national levels. She interacts with senior corporate management, operations management, practice leaders, and other staff to ensure the company is focused in the right locations with the right resources to meet the needs of the marketplace. Ms. Fidler's role as the Principal-in-Charge of this project will be as a point of contact for the WRWSA in the event that concerns arise regarding the quality of work or timeliness of its completion. She has the ability to rapidly implement corrective actions by directing the Cardno Team's Project Officer to resolve issues up to and including assigning additional staff resources, overseeing budgets, and ensuring on time deliverables. As the Southeast Business Unit Leader, Ms. Fidler has the resources of Cardno's full organization to support this project and client needs.

Jason Early, PG
Cardno
Key Disciplines:
- Groundwater Modeling
- Groundwater Withdrawal Permitting
- Water Conservation & Management Plans
- Hydrogeologic & Remedial Investigations
- Aquifer Testing

Assigned Office Location: Ashland, VA
Years of Experience: 20

Mr. Jason Early, PG, is a hydrogeologist with 20 years' experience in groundwater flow modeling, hydrogeologic investigations, and well construction and testing. Mr. Early has performed groundwater modeling evaluations for municipalities, water and wastewater engineering firms, agricultural, and industrial clients in Virginia, North Carolina, Maryland, Delaware, Pennsylvania, West Virginia, New York, New Jersey, Arkansas, Oklahoma, Arizona, and California. He has developed numerous local-scale and regional-scale, multi-layer, and hydro-geologically complex MODFLOW-based models, and is proficient in the use of MODFLOW graphical user interfaces including Groundwater Vistas, Visual MODFLOW, and Model Muse. He also has experience with various MODFLOW flow and transport packages such as MODFLOW-NWT, SEAWAT, MODPATH, and MT3D. Recently, Mr. Early used the Virginia Department of Environmental Quality's regional Coastal Plain aquifer VAHydroGW model (MODFLOW and SEAWAT) to determine the area of impact for the Eastern Middlesex County Regional Water System. Mr. Early also has extensive experience with the design, construction oversight, and testing of groundwater production and observation/monitoring wells, including logging of cuttings, geophysical logging interpretation, and APT. Within the past two years alone, he has logged and overseen the construction of seven new public water system production wells and has designed and analyzed three aquifer performance tests.

David Kelly, PG
Cardno

Key Disciplines:

- Water Demand Forecasting
- Water Conservation Planning
- Water Use Permitting
- Groundwater MFLs
- Wellfield Feasibility Analysis
- Groundwater Modeling

Assigned Office Location: Riverview, FL

Years of Experience: 20

Mr. David Kelly, PG, is a hydrogeologist with 20 years' experience. He has high-level expertise in water supply planning, water demand forecasting, development of water conservation plans for water use permits, technical and financial feasibility analysis for groundwater wellfields, groundwater flow modeling, hydrogeologic investigations, and well construction and testing. Mr. Kelly has performed water supply planning for state and federal agencies, municipalities, and agricultural and industrial clients. His groundwater modeling experience includes expertise in the use of the SWFWMD's DWRM2 and Northern District model, and the SFWMD's East Central Florida Transient Model and North East Florida model. Mr. Kelly also has extensive experience with the design, construction oversight, and testing of deep monitor wells including geophysical logging and APTs. Most recently, he oversaw the construction of nine deep monitor wells for the NWFWMD as part of their efforts to establish saltwater intrusion minimum aquifer levels in three counties in Florida's Panhandle.

Martin Kelly, PhD
Cardno

Key Disciplines:

- Water Resource Regulatory
- Water Use Permitting
- Environmental Flows
- Environmental Services
- Hydrology
- Aquatic Ecology
- Limnology
- Zoology

Assigned Office Location: Riverview, FL

Years of Experience: 40

Dr. Martin Kelly has extensive experience with all aspects of MFLs, including the development of MFL criteria, their application to numerous aquatic systems (freshwater and estuarine), peer review, and rule development. He served as MFL program director for SWFWMD from 1998-2011, managing 14 technical and professional staff members. As program director, he was responsible for establishing mandated MFLs on lakes, wetlands, streams, and estuaries. Under Dr. Kelly's direction, staff developed and implemented a habitat-based approach for assessing environmental flows on lakes, streams, and estuaries. MFLs developed by SWFWMD scientists for rivers now routinely include the use of physical habitat simulation (PHABSIM) modeling for evaluating impacts on river flows – a first for Florida Rivers. MFL recommendations developed for the Homosassa and Chassahowitzka Rivers coastal spring systems included for the first time, the use of projected sea-level rise as a consideration when developing environmental flow recommendations.

Josh Yates
Cardno

Key Disciplines:

- Water Supply Planning
- Water Demand Forecasting
- Water Conservation Planning
- Groundwater Flow Modeling & Analysis
- Hydrogeologic/Water Resources Investigations
- MFL Impact Analysis
- Water Use Permitting

Assigned Office Location: Riverview, FL

Years of Experience: 13

Mr. Joshua Yates is a hydrogeologist with 13 years' experience. He has expertise in water supply planning, water demand forecasting, water conservation planning to support water use permitting, groundwater flow modeling, hydrogeologic investigations, and well construction and testing. Mr. Yates has performed water supply planning for multiple state agencies, municipalities, and agricultural and industrial clients. His groundwater modeling experience includes use of the SWFWMD's DWRM2/3 and Northern District models. He has developed multi-layer MODFLOW-based models using parameter estimation calibration methods and is proficient in the use of MODFLOW graphical user interfaces that include Groundwater Vistas. Mr.

Yates also has extensive experience with construction oversight and testing of deep monitor wells including geophysical logging and APT.

Erin Hunt, PE

Jones Edmunds

Key Disciplines:

- Water Resources
- Water Supply
- Environmental Engineering
- Project Management
- Client Services

Assigned Office Location: Tampa, FL

Years of Experience: 20

Ms. Erin Hunt, PE, will serve as the Water Supply Options Team Leader from Jones Edmunds for the project. Ms.Hunt has over 20 years of experience specializing in water-related projects including water treatment, water resources planning, the development of alternative water supply sources, and the interconnection of water supply and wastewater treatment systems. She has also worked on developing population projections for water supply and wastewater demands. Ms. Hunt has worked with Water Management Districts and regional water supply agencies throughout Florida in developing water supply plans and evaluating alternative sources of supply.

Terri Lowery

Jones Edmunds

Key Disciplines:

- Community/Public Relations Programs
- Legislative Coordination and Support
- Presentations Materials
- Promotional Activities
- Communication Media Development

Assigned Office Location: Gainesville, FL

Years of Experience: 31

Ms. Terri Lowery will be responsible for Outreach, Meeting Facilitation, Governance, and Agency Coordination from Jones Edmunds' for the duration of the project. Ms. Lowery is the Managing Director of Sales and Marketing with Jones Edmunds and has more than 28 years of experience working with clients and technical staff on public involvement programs including developing presentation materials, establishing speakers' bureaus, organizing and conducting public meetings, and interfacing with the media. Ms. Lowery is a registered lobbyist and also assists with legislative tracking and grant pursuits, organizing and conducting funding workshops, and monitoring and reporting on legislative activities. She is also highly qualified in organizing and coordinating public meetings, media communication, and celebration events for community milestones. Recently, Ms. Lowery served as funding and public relations specialist for Citrus County's Southwest Regional Water Reclamation Facility Advanced Wastewater and Reuse Project.

Chris Baggett, PE, ENV SP

Jones Edmunds

Key Disciplines:

- Water System Engineering
- Wastewater System Engineering
- Reclaimed Water System Engineering
- Legislative Coordination and Support

Assigned Office Location: Gainesville, FL

Years of Experience: 23

Mr. Chris Baggett, PE, ENV SP is a Senior Engineer at Jones Edmunds with more than 23 years of experience in planning, design, analysis, and modeling of water, wastewater, and reclaimed water systems. His master planning experience includes small system and large regional systems with over 700,000 customers. His detailed design experience includes piping systems, intake structures, pumping systems, chemical treatment systems, treatment units, mixing systems, storage tanks, control valves, and development of system control strategies. His extensive analysis and modeling experience includes steady-state and transient hydraulic network analysis; water quality distribution system modeling; treatment facility hydraulic profile modeling;

cavitation analyses; and design and operational optimization. Mr. Baggett offers clients not only an understanding of infrastructure design but more importantly an in-depth knowledge of how to evaluate systems and facility sites to optimize efficiency and reduce O&M. His software knowledge includes LIQT, HAMMER, WaterCAD/GEMS, SewerCAD/GEMS, H2O MAP Water, H2OMAP Sewer, KYPipe, and MODFLOW.

Tom Friedrich, PE, BCEE

Jones Edmunds

Key Disciplines:

- Water and Wastewater Treatment Process Design
- Water Quality, Water Chemistry and Microbiology

Assigned Office Location: Gainesville, FL

Years of Experience: 27

Mr. Tom Friedrich, PE, BCEE, has over 27 years of experience in water treatment process design, systems evaluation, master planning, large-facility project management and construction administration. Through his work with the utilities in west central Florida, Mr. Friedrich understands the challenges and needs associated with water supply and options available to meet these needs. He has worked with several utilities to develop multi-pronged approaches to providing reliable sources of water supply for their communities.

4.0 Project Experience

For this section, per the RFQ, we were asked to "provide example projects relating to project service areas." We interpret this to mean the services summarized in the SOQ document on pages 4-5 of 27, and we outline these below in Table 4-1. In sections 5.0 and 6.0 of our Team's response, we provide a detailed discussion of our understanding of these project service areas and our approach to addressing each one.

Table 4.1 Summary – Project Service Areas

Project Service Areas	
1	Update the population and water demands.
2	Identify and quantify viable public supply conservation projects and initiatives, reuse availability and offset potential, and additional public water supply sources.
3	Evaluate the ability of surface water and groundwater resources to meet the projected demands.
4	Develop Project feasibility and planning-level cost estimates of viable water supply project options.
5	Develop a proposal in terms of ownership, governance, funding sources, cost sharing, and participant structure for regionally developed projects.
6	Provide conclusions and recommendations containing a matrix with timing and prioritization of potential project options and strategies.

The Cardno Team offers all the skills, experience and demonstrated expertise necessary to address all of the project service areas listed above. Our seasoned team members are highly qualified in the development of water demand projections, identifying and quantifying viable alternatives such as conservation and reuse projects and alternative sources, evaluating potential impacts of alternatives on water resources and their established MFLs, assessing the permittability and financial feasibility of new sources and projects; and the critical need to address governance and financing solutions for regional projects. Moreover, the Cardno Team's principal members have been at the forefront of some of the most pressing issues in water supply planning and alternative water supply projects in Florida during the past two decades. For additional information on staff qualifications and key experience, refer to Sections 2.0 and 5.0 of this proposal.

The examples listed in the first half of Table 4-2 are complex, multi-year water supply planning projects and those in the second half of the table are projects that include elements of the requested project service areas. All the example projects were completed for Florida water management districts, the WRWSA, and other entities by the Cardno Team's key project staff. The successful completion of these water supply planning projects demonstrates that we have the range of capabilities necessary to provide the high-level evaluation and analysis to comprehensively address all the project service areas listed above.

Water Supply Planning Projects Completed by the Cardno Team

Table 4.2 Water Supply Planning Projects

Project / Client	Project Description
Water Supply Plan 2014 Update *WRWSA*	**Cardno.** Developed the WRWSA's 2014 Water Supply Plan update. A complex series of tasks was required including 1) population and water demand projections, 2) assessment of the quantity of water to be conserved or made available through conservation, reclaimed water, surface water, seawater, and groundwater sources, 3) ran a groundwater model to delineate areas where Upper and Lower Floridan aquifer wellfields could be developed, 4) development of water supply options to use reclaimed water, river water, desalinated seawater, and groundwater, 5) development of estimates of required infrastructure, costs, customer bases, and permitting requirements for the water supply options, and 6) a proposed structure for ownership, governance, funding sources, cost sharing, and participant structure for regionally developed projects. *(2013 to 2014)*
Integrated Water Resources Plan *St. Johns County*	**Jones Edmunds.** Developed the St. Johns County's Integrated Water Resources Plan (IWRP), which identified the combination of alternatives that best meets the County's multiple objectives (e.g., water quality, water supply, natural systems). The IWRP provided a road map for the County to implement short-term and long-term water resources solutions through 2040. *(2013 to 2016)*
Northwest North Dakota Water Supply Environmental Impact Statement *U.S. Bureau of Reclamation*	**Cardno.** Conducted a comprehensive series of water supply investigations to determine the 2060 water supply demands of northwest North Dakota communities and alternatives for supplying the needed water. The investigations included water demand and population projections, water supply alternatives analysis, and a design study for an aquifer recharge project that included a flow study of rivers and groundwater modeling of the aquifer to be recharged. *(2011 to 2013)*
District-Wide Water Supply Assessment *SRWMD*	**Cardno.** Developed water demand projections for all use sectors for a 20-year planning period and used groundwater modeling to evaluate how meeting these demands with groundwater would impact proposed and established MFLs for lakes, wetlands, streams, and springs. The assessment included evaluation of all potential sources in the District that could provide water for users and the development of project concepts to utilize those sources. *(2009 to 2011)*
2010 Regional Water Supply Plan *SWFWMD*	**Cardno.** Assisted the SWFWMD with the development of all aspects of their 2010 Regional Water Supply Plans for the Northern, Tampa Bay, Heartland, and Southern Planning Regions. *(2009-2010)*
2005 Regional Water Supply Plan *SWFWMD*	Prior to joining Cardno, Project Officer Gregg Jones oversaw and directly supervised a large team of hydrogeologists, environmental scientists, and planners to develop the SWFWMD's 2005 Regional Water Supply Plans for the Northern, Tampa Bay, Heartland, and Southern Planning Regions. (2004 to 2005)
2000 Regional Water Supply Plan *SWFWMD*	Prior to joining Cardno, Project Officer Gregg Jones oversaw and directly supervised a large team of hydrogeologists, environmental scientists, and planners to develop the SWFWMD's first Regional Water Supply Plan. (1998 to 2000)

Additional Relevant Project Experience

Table 4.3 Cardno Team Projects that Include Elements of the Requested Project Services

Project Name	Client	Dates	Description
Water Supply Assistance	Citrus County	2017	**Jones Edmunds. P**repared a report outlining the County's plan for addressing nutrient loading in the springsheds of three outstanding Florida springs. Jones Edmunds also prepared a letter to the SWFWMD that detailed the status of the County's current Alternative Water Supply projects as required by the District's 2016 Water Supply Plan.

Project Name	Client	Dates	Description
Middle Suwannee River Minimum Flow Peer Review	SRWMD	2017	**Cardno.** Reviewed all aspects of the proposed minimum flows report for the middle Suwannee River and associated springs. Performed an in-depth review of all aspects of the report including establishing the period of record flow baseline, seasonality of flow, low flow threshold, floodplain characteristics, habitat modeling, baseflow contribution to overall river flow, and quantity of water available for withdrawal.
Master Plan for Water Distribution System	City of Zephyrhills	2015 to 2016	**Jones Edmunds.** Assessed the current system integrity and update the existing Master Plan (developed for the City's water distribution system in 2012) and provide budgetary estimates for related Capital Improvement Projects (CIP) at a planning level.
Alternative Water Supply Facilities Master Plan	JEA	2014 2015	**Jones Edmunds.** JEA's CUP required that an Alternative Water Supply (AWS) Facilities Master Plan be developed and submitted to the St. Johns River Water Management District. The plan identified the proposed facilities and nontraditional water sources that JEA or others will develop to provide water supply within the JEA service area when these sources are needed to supplement groundwater and reclaimed water use as allocated and conditioned under this permit.
Support for Development of Minimum Aquifer Levels	NWFWMD	2013 to Present	**Cardno.** Developed strategies to minimize the impact of saltwater intrusion in the Floridan aquifer in the western Florida Panhandle. The project is a five-year effort that is divided into three phases. Monitor well construction and testing to characterize aquifer hydraulic characteristics and water quality, construction of sophisticated regional groundwater flow and solute transport models to predict how current and projected groundwater withdrawals will affect the movement of saltwater in the Floridan aquifer, and use of the results of modeling to maximize groundwater withdrawals while minimizing the inland movement of saltwater in the aquifer.
Groundwater Recharge Investigation	Polk County	2011 to 2013	**Jones Edmunds**. Conducted a Groundwater Recharge Investigation to quantify the benefit to the Upper Floridan Aquifer from recharge to Rapid Infiltration Basins operated by Polk County Utilities at the Northeast Regional Wastewater Treatment Facility. The project included several phases including a desktop analysis to determine the overall feasibility of the project. Performed extensive field studies to gather data for the subsequent modeling phase that included well installation, pump tests, a load test, and an aquifer performance test. After testing was complete, we developed a detailed site-specific groundwater model that showed that indirect recharge was feasible at this site.
Lakeview Hills Water Supply	Marion County	2009 to 2013	**Jones Edmunds**. Provided design, permitting and construction-phase services and expanded the Marion County Utilities (MCU) water system to serve the Lakeview Hills subdivision and 28 other residential connections in accordance with an agreement between Sunshine Utilities and Marion County Solid Waste Department.
Water Supply Services	St. Johns County	2012 to 2015	**Jones Edmunds**. Performed assignments as needed to support SJCUD's efforts to address existing and future water supply-related activities. Services included summarizing meetings and discussions with regulatory agencies, performing water-supply-related analyses to support SJCUD, providing recommendations to SJCUD on water supply issues, preparing information and summaries for internal and external presentations on water supply, and providing additional water-supply-related services as directed by SJCUD.
Upper Santa Fe River Basin Water Resource Assessment	SRWMD	2011 2012	**Cardno.** Used statistical analyses and groundwater flow modeling to assess how regional groundwater withdrawals were impacting lakes, wetlands, streams, and springs in the Upper Santa River Basin.
Water Conservation Potential Water Supply Plan 2010	SJRWMD	2010	**Jones Edmunds**. Developed water conservation estimates for the 2010 SJRWMD water supply plan using 2 years of billing information from five separate participating utilities. We integrated the account-level water consumption records with the County property appraiser's GIS data and parcel-based population projections to develop multiple residential and non-residential water use profiles. Future baseline water use was calculated and water savings Best Management Practices, including factors for passive replacement and program efficiency, were applied to existing and projected water demands in each category to evaluate the water savings potential and costs for implementing an aggressive demand-management program.

Project Name	Client	Dates	Description
Lakeview Hills Alt Water Supply Coordination	Marion County	2008 to 2009	**Jones Edmunds**. Assisted with negotiations regarding alternative water supply options for Lakeview Hills.
Evaluation of the Use of Reclaimed Water for Phosphate Mining	Mosaic Fertilizer	2008	**Cardno.** Evaluated the potential to use reclaimed water at Mosaic's active phosphate mining operations, determined available reclaimed water quantities, and developed planning level costs to deliver water from wastewater treatment plants to mining operations.
Traditional Groundwater and Alternative Water Supply Projects	PRMRWSA, North Port, Oldsmar, Marco Island, Punta Gorda, and Collier, Charlotte, and Volusia Counties.	1995 to 2018	**Cardno.** Planned, designed, permitted, tested, and constructed fresh and brackish groundwater wellfields, deep injection wells for brine disposal, and aquifer storage and recovery systems for numerous public sector clients in Florida including the PRMRWSA, the Cities of North Port, Oldsmar, Marco Island, and Punta Gorda, and Collier, Charlotte, and Volusia Counties.

5.0 Understanding of Project Goals and Objectives

The Cardno Team understands that the objective of the RWSP update is to assist public utilities within the WRWSA region by identifying implementable water supply options and strategies to meet future demands. The major goals and objectives of the RWSP and our understanding of them are listed below.

5.1 Updated 2020 – 2040 population and water demand projections for utilities.

Water demand projections will be updated using SWFWMD/SJRWMD data, WRWSA member planning, and other studies. We developed the demand projections for the WRWSA's 2014 RWSP and have strong relationships with the planning staff of the both districts and can work with them to develop demand projections quickly and efficiently. We also understand the importance of comparing district data to that of local governments so that differences can be reconciled. We will incorporate the TRC into this process to ensure they are comfortable with the final projections.

5.2 Development of conservation and reuse strategies/projects which prolong the availability of existing water supplies of utilities and other use sectors and maximize potential water use offsets.

The potential for demand reductions that can be achieved through water conservation will be determined. At the same time, the ability of reclaimed water to offset demand during the planning period will be analyzed and project options will be proposed that have the highest rate of utilization and offset potential. The demand that can be offset by conservation and reclaimed water will be subtracted from the projected demand and timeframes for when these measures will be fully developed will be determined. The benefit of this approach is that the ability to meet demand with groundwater will be extended and the portion of the projected 2040 demand that will need to be met with alternative sources and the timeframe for when they will be needed will be clearly identified.

5.3 Evaluation of the availability of traditional and alternative water resources to meet projected demands of all use sectors and the timeframe for developing these sources after maximizing conservation and reuse.

One of the most important tasks is to determine whether demand reductions achieved through conservation and use of reclaimed water, and the demand that can be met by remaining groundwater reserves will exceed the projected demands of member utilities through 2040. Once this is determined, the WRWSA will have the information to determine the degree of emphasis and urgency to be placed on the planning, funding, design, and development of alternative water supplies.

5.4 Identification of water supply project options and required infrastructure to meet the public supply demand.

We will identify water supply project options capable of meeting water demands of utilities `during the planning period. An analysis of the feasibility, production quantities, timeline for implementation, required infrastructure, and estimated unit and capital costs for each option will be developed.

5.5 Proposed terms of governance, funding sources and mechanisms, cost-sharing and participant structure for projects that involve multiple entities.

For projects that involve multiple entities, the Cardno Team will work with the WRWSA and utilities to reach consensus on issues that include funding, long-term management, and potential cost-sharing structures.

6.0 Cardno Team Project Approach

The Cardno Team knows successful project management begins with a thorough understanding of the project goals, objectives and the tasks necessary to achieve those goals. Because we produced the WRWSA's 2014 RWSP, we have already developed a comprehensive technical approach to addressing all aspects of the required project service areas and are uniquely positioned to complete the required deliverables on time, and within budget.

6.1 Updating population and water demand estimates and projections for utilities in the WRWSA region for the 2020-2040 planning period.

Population and public water supply demand estimates and projections for utilities for the planning period will be based on SWFWMD/SJRWMD demographic and water use data, WRWSA member planning, and other studies. The Cardno Team developed the WRWSA's 2014 population and water demand projections so we are well versed in the projection methodologies. At this early stage in the process, we are assuming the projection methodologies will be similar to those used for the 2014 RWSP. These are shown in Table 6.1 and will be used in the portion of the WRWSA within the SWFWMD boundaries. Slightly modified projection methodologies may be used for the portion of Marion County in the SJRWMD.

Table 6.1 Projection Methodologies

Name	Description
Public Supply	Calculated by determining average per capita residential water use for a recent five-year period multiplied by projected population for each utility service area (from SWFWMD's Small Area Population Projection Model).
Domestic Self Supply	Calculated by determining average per capita residential water use for a recent five-year period multiplied by projected population for areas outside utility service areas (from SWFWMD's Population Projection model).
Agricultural	Acreage trends for each crop type will be determined using recent water use permit data and trends will be extrapolated through 2040. Irrigation application rates for each crop type will then be multiplied by projected crop acreage (Ag demands equal projected crop acreage multiplied by irrigation application rate).
Industrial/ Commercial	Calculated by multiplying 2015 permitted Industrial/Commercial quantities (from SWFWMD's WUP database) by the average percentage of total permitted quantities used by permittees (2011-2016). A growth trend will then be applied to the 2015 base year to derive the projections.
Recreational	Golf course irrigation demands = average golf course irrigation water use (2011-2016) per hole multiplied by a linear trend equation reflecting the number of golf course holes likely to be built through 2040. Landscape demands = average per capita landscape irrigation water use (2003-2007) multiplied by projected county population (2020 - 2040). Rec demands = golf course irrigation demand + landscape irrigation demand.

6.2 Development of conservation/reuse strategies and projects which prolong availability of existing water supplies of utilities and other use sectors to maximize potential water use offsets.

Conservation and reclaimed water projects are the alternatives that are most likely to be developed and maximized due to regulations and incentives and their favorable cost benefit. Demand reductions from conservation projects determined in the 2014 RWSP will be revised based on updated water demand projections, water savings from local government conservation programs, and potential for savings by local governments as determined by the Alliance for Water Efficiency Water Conservation Tracking Tool.

Reclaimed water project options will be updated and their rate of utilization, potable water offset, and cost per 1000 gallons re-evaluated. Once reductions in demand from water conservation and reclaimed water are determined, they will be subtracted from the projected 2040 demand. The remaining demand is what will need to be met with other sources and the timeframe for when they will be needed will be identified.

It is important to note that the usefulness of this exercise is limited if overall water demand is compared to conservation and reclaimed water offsets only at the regional level. This comparison is only useful when demands are compared to offsets at the utility service area level. The Cardno Team utilized this approach for the WRWSA's 2014 RWSP.

6.3 Evaluation of the availability of traditional and alternative water resources to meet projected demands for all use sectors and the timeframe for developing these sources after maximizing conservation and reuse.

As discussed in the approach for the previous section, we will first determine the quantity of the projected demand to be offset with water conservation and reclaimed water. This quantity will then be subtracted from the projected demand. Next, constraints on the availability of Upper Floridan aquifer groundwater will be re-evaluated in light of MFLs of major springs that were adopted during the past five years. This analysis will be conducted at the utility service area level in the following manner:

First, water conservation and reclaimed water offsets identified for each public supply utility service area will be subtracted from the projected 2040 demand for that service area. Next, the currently permitted quantities of groundwater for each service area will be determined and compared to the projected demands, adjusted for conservation and reclaimed water offsets, to determine whether a water supply deficit or surplus will exist and when it will occur during the planning period. The result of this exercise will be the identification of all utility service areas that will have water supply deficits prior to 2040. This information will be presented to the TRC to ensure their agreement. We will meet with staff of each of the utility service areas with identified deficits to discuss water supply options that could meet their demands. Upper Floridan aquifer groundwater options will be investigated first because of their relatively low development cost and ability to locate them near demand centers. Locations for wellfields will be identified and production quantities necessary to overcome deficits will be input into the SWFWMD's Northern District Model to determine whether exceedances to MFL water bodies near proposed wellfields would occur. If the necessary quantities cannot be permitted from the Upper Floridan aquifer, the Lower Floridan aquifer will be investigated using a similar process. Once it is determined that groundwater quantities can be developed from the Upper or Lower Floridan aquifer, wellfield project options including planning-level costs of infrastructure and O & M will be developed.

An additional consideration for use of groundwater by the public supply sector is that it could potentially be allocated to any user, regardless of use sector. For example, a power plant proposed to be developed by 2030 could use all available groundwater over a large area, which would preclude public supply utilities in the area from developing additional groundwater quantities. We will compare public supply demand projects for each utility service area to projections for all use sectors to identify areas where groundwater may be fully allocated to use categories other than public supply.

In the event that Upper or Lower Floridan aquifer groundwater options are not permittable for a service area(s) with a deficit, surface water sources will be investigated. Surface water sources investigated in the WRWSA's 2014 RWSP include several locations on the Withlacoochee and the Lower Ocklawaha Rivers. It is unlikely that development of a surface water source could be feasible for an individual service area due to the high cost of treatment and transmission. As an alternative, we will determine if a number of utility service areas with projected deficits exist in relatively close proximity. If such clusters are identified, options for a regional wellfield and/or surface water supply that could service all utility service areas with deficits will be developed.

6.4 Identification of project options and required infrastructure to meet public supply demand.

Our approach to identifying project options for conservation, reclaimed water, Upper and Lower Floridan aquifer groundwater, and surface water was discussed in the previous section. Regarding required infrastructure, our engineering team of water supply engineers from Jones Edmunds will take a "fresh look" at the feasibility of project options proposed in the WRWSA's 2014 RWSP. They will also investigate new project options and will determine the infrastructure necessary to support them.

Consideration will be given to the need for and potential locations of regional water supply and transmission facilities and system interconnect options that could become economically feasible when utility customer bases grow sufficiently large. A conceptual plan for this will be developed in consultation with the WRWSA and the TRC.

Order-of-magnitude opinions of costs for previously evaluated and newly-proposed options will be updated using standard construction cost Indexes. The costs for each project option will be presented as a total cost per 1,000 gallons of treated water and will include an estimate of O & M and debt servicing costs. Assumptions associated with the opinion of costs will be clearly detailed and uncertainty will be represented by providing costs as ranges or including contingency allowances. Implementation timelines will be developed that identify when options will need to begin to be planned, designed, permitted, and constructed to ensure they will come online when needed. This information will enable the WRWSA to have a firm scientific and economic basis from which to select project options to meet demands.

6.5 Proposed terms of governance, funding sources and mechanisms, cost-sharing and participant structure for projects that involve multiple entities.

We will work with the WRWSA, local governments, and water management districts to develop ownership, governance, funding sources, cost sharing and participant structures for proposed water supply projects. Depending on the level of detail and complexity the WRWSA wishes to dedicate to this effort, we can bring in additional legal and financial experts to provide higher-level assistance. Examples of issues that may need to be considered include:

- Forms of Decision Making – consensus decision making vs. weighted voting based on financial capabilities, use of existing and future project water, contributions to upfront costs, etc.
- Financing Alternatives – public private partnerships, public/private and third party financing.
- Participant and Ownership Structures – operation and maintenance contracts, sale/leaseback arrangements, design, build, finance, and operate functions.

6.6 Willingness and Ability to Meet Time and Budget Requirements

The Cardno Team is keenly aware of the importance of the project schedule and budget and we commit to strict adherence to both elements. We will prepare and maintain a detailed progress schedule and budget for all key project activities. On a weekly basis, we will update progress schedules, activities of work required, duration of each activity, sequence in which each activity occurs, and remaining budget, and make recommendations for work not yet completed. Teleconferences will be held between Cardno Team members and the WRWSA Executive Director whenever necessary to discuss progress and budget status and focus on key production aspects of the project.

7.0 Authority Member Governments and Litigation

In response to WRWSA SOQ requirements, neither Cardno, nor Jones Edmunds, is currently involved in any litigation against any of the WRWSA's member governments across Citrus, Hernando, Marion and Sumter Counties, either directly or retained for testimony and expertise on behalf of any other entity in litigation against the WRWSA, or any of its Members.

A summary of Cardno's current member government and regional contracts is provided below in Table 7.1. Additional project information is available upon request.

Table 7.1 Summary of Current Contracts for WRWSA Counties / Member Governments

Location	Project
Citrus County	▪ Citrus County Yulee Drive Sidewalk / West Central to 19 ▪ CC Generators – Sugarmill Woods WTP No 3
Hernando County	▪ ENV Hernando County DPW Facility ▪ Hernando County Sunshine Grove Road @ Jacqueline Road ▪ HC RDW Toucan Trail to SR 50 ▪ HC Palm Creek Culvert Replacement ▪ WTR Hernando Government CESA ▪ WTR Hernando County Admin & Operations ▪ WTR HC Southwest Wellfield Design TO66
Marion County	▪ No current contracts
Sumter County	▪ No current contracts

8.0 Client References

Per instructions of the RFQ, below are Cardno and Jones Edmunds Florida public entity Client References and contact information.

Table 8.1 Cardno Public Entity Client References

Reference 1	
Client/Agency Northwest Florida Water Management District 81 Water Management Drive , Havana, FL 32333-4712	**Point of Contact:** Ms. Kathleen Coates T: 850.539.5999, kathleen.coates@nwfwater.com
Key Project Name: Support for Regional II MFL's Development (2013 to Present) Developed strategies to minimize the impact of saltwater intrusion in the Floridan aquifer in the western Florida Panhandle. The project is a five-year effort that is divided into three phases. Monitor well construction and testing to characterize aquifer hydraulic characteristics and water quality, construction of sophisticated regional groundwater flow and solute transport models to predict how current and projected groundwater withdrawals will affect the movement of saltwater in the Floridan aquifer, and use of the results of modeling to maximize groundwater withdrawals while minimizing the inland movement of saltwater in the aquifer. **Relevance of this Work to the WRWSA Water Supply Plan Update** a) Familiarity with using sophisticated groundwater models b) Using groundwater models to evaluate the impact of groundwater withdrawals on water bodies with proposed and established MFLs	
Reference 2	
Client/Agency Suwannee River Water Management District 9225 CR 49, Live Oak, FL 32060	**Point of Contact:** Mr. John Good T: 386.362.1001, john.good@srwmd.org
Key Project Name: Upper Suwannee River MFL Peer Review (2017) Conducted peer review for the proposed Middle Suwannee River minimum flow. Assembled a panel of four experts in the fields of river flow statistics, fisheries and recreation, HEC-RAS and PHABSIM-based models, wetland ecology, and hydrogeology, who provided a comprehensive review and assessment of the extensive technical analysis that was performed to develop the proposed minimum flow. **Relevance of this Work to the WRWSA Water Supply Plan Update** a) Our familiarity with the tools and techniques used to establish minimum flows for rivers will be necessary for evaluating quantities of water that will be available from potential withdrawal locations on the Withlacoochee and Ocklawaha Rivers for water supply.	
Reference 3	
Client/Agency Southwest Florida Water Management District 2379 Broad Street, Brooksville, FL 34604	**Point of Contact:** Ms. Barbara Nordheim-Shelt T: 352.796.7211, barbara.nordheim-shelt@swfwmd.state.fl.us
Key Project Name: Lower Hillsborough River Dissolved Oxygen (DO) Stratification Study (2016-2017) The purpose of this study was to determine whether augmentation of the lower Hillsborough River from a number of different sources to meet the required MFL had improved DO levels over time. Cardno staff amassed over a decade of data collected at numerous stations by various agencies and organized and uploaded it to a Microsoft Access database. A complex analysis plan was developed that used an extensive suite of statistical methods to analyze the data, including Spearman's Rank Correlation, Wilcoxon Rank Test, Seasonal Kendall Tau Test, Welch ANOVA Analysis, and linear regression techniques. Results of the analysis definitively proved that DO levels had significantly improved over time as a result of augmentation. **Relevance of this Work to the WRWSA Water Supply Plan Update** a) Our familiarity with the tools and techniques used to evaluate the benefits of minimum flows for rivers will be necessary for evaluating quantities of water that will be available from potential withdrawal locations on the Withlacoochee and Ocklawaha Rivers for water supply.	
Reference 4	
Client/Agency Withlacoochee Regional Water Supply Authority Lecanto Government Building 3600 W. Sovereign Path, Suite 228, Lecanto, FL 34461	**Point of Contact:** Mr. Richard Owen, AICP T: 352.527.5795, richardowen@wrwsa.org

Key Project Name: Water Supply Plan Update for the Withlacoochee Regional Water Supply Authority (2014-2015)
Developed the WRWSA's 2015-2035 Water Supply Plan. A complex series of tasks was required to complete the plan including 1) population and water demand projections, 2) assessment of the quantity of water to be conserved or made available through conservation, reclaimed water, surface water, seawater, and groundwater, 3) modeling to delineate areas where Upper and Lower Floridan aquifer wellfields could be developed, 4) development of water supply options to use reclaimed water, river water, desalinated seawater, and groundwater, and 5) development of estimates of required infrastructure, costs, customer bases, and permitting requirements for the water supply options.

Table 8.2 Jones Edmunds Public Entity Client References

Reference 1	
Client/Agency Citrus County 3600 W. Sovereign Path, Ste 291, Lecanto, FL 34461-9014	**Point of Contact:** Christina Malmberg, Utility Planning & Engineering Director T: 352.527.7616, christina.malmberg@citrusbocc.com
Key Project Name: Southwest Regional Water Reclamation Facility Advanced Wastewater and Reuse Project The Southwest Regional Water Reclamation Facility (WRF) is an existing wastewater treatment facility owned and operated by Citrus County. Jones Edmunds completed the planning, permitting, and design phase of an advanced wastewater treatment plant meeting a 5-5-3 effluent quality to replace the existing WRF. Construction began in 2017. The current facility will be replaced by a new 1.5-MGD AADF 4-stage BNR oxidation ditch system followed by secondary clarifiers, disc filters, and chlorine disinfection, with reclaimed water disposed to rapid infiltration basins on the plant site and eventually to the County's public access reuse system. Jones Edmunds also prepared a Wastewater Facilities Plan in support of an SRF Construction Loan application and provided additional support during application process. **Relevance of this Work to the WRWSA Water Supply Plan Update:** a) Familiarity with using sophisticated groundwater models within the study area b) Evaluation of recharge potential within the study area c) Proven ability to identify and obtain funding for projects	
Reference 2	
Client/Agency Marion County 412 SE 25th Ave., Ocala, FL 34471-2687	**Point of Contact:** Mounir Bouyounes, PE, County Administrator T: 352.671.8686, mounir.bouyounes@marioncountyfl.org
Key Project Name: Lakeview Hills Water Supply Jones Edmunds provided design, permitting and construction-phase services and expanded the Marion County Utilities (MCU) water system to serve the Lakeview Hills subdivision and other residential connections. This provided a safe drinking water supply to an area showing signs of groundwater contamination. The project include a new well with pump, modifications to the high service pump station and sodium hypochlorite feed system, a distribution system, hydraulic modeling, and improvement on residential lots. **Relevance of this Work to the WRWSA Water Supply Plan Update** a) Providing a safe drinking water supply to an area showing signs of groundwater contamination.	
Reference 3	
Client/Agency Hernando County 15400 Wiscon Road, Brooksville, FL 34601-8807	**Point of Contact:** Landis Legg, Wastewater Plants Supervisor T: 352.754.4037,landisl@co.hernando.fl.us
Key Project Name: Airport Water Reclamation Facility Improvements Jones Edmunds as a part of a team with Cardno provided planning, permitting, and final design services, including designing the expansion of a 0.75-MGD wastewater treatment plant to 6 MGD and expanding their 0.75-MGD rapid infiltration basin disposal system to 4.2 MGD. Through this effort, we assessed the long-term flow projections in the area and the infrastructure-required base to support these projects. **Relevance of this Work to the WRWSA Water Supply Plan Update** a) Familiarity with using sophisticated groundwater models specifically within the study area of this project. b) Understanding of the needs and issues within the study area related to water resources c) Proven partnerships with Cardo and ability to work together to successfully deliver a project to our client.	

EXHIBIT A

WITHLACOOCHEE REGIONAL WATER SUPPLY AUTHORITY
REQUEST FOR QUALIFICATIONS
REQUIRED COVER PAGE

SUBMIT QUALIFICATIONS TO: Withlacoochee Regional Water Supply Authority
3600 W. Sovereign Path, Suite 228
Lecanto, Florida 34461

Direct Inquiries to: LuAnne Stout, Administrative Assistant
Phone: 352-527-5795 E-mail: lstout@wrwsa.org

DATE POSTED: 11/16/17	PROPOSALS WILL BE OPENED: January 26, 2018

TITLE: WRWSA Regional Water Supply Plan Update

SPECIFICATIONS: This effort is to update the WRWSA Regional Water Supply Plan. Portions of the WRWSA Regional Water Supply Plan Update will be incorporated into the Southwest Florida Water Management District's (SWFWMD) Regional Water Supply Plan for its Northern Region. SWFWMD is a cooperator and is co-funding this work effort.

Respondent Name: Cardno, Inc.

Mailing Address: 3905 Crescent Park Drive

City-State-Zip: Riverview, FL 33578

Telephone Number: (813) 367-0989

E-mail address: Gregg.jones@cardno.com

Authorized Signature:

Full Name (please print or type): Gregg Jones, PhD, PG

Title (please print or type): Program Manager II/ Water Resources Technical Director

We the above signed, as Respondents hereby declare that we have carefully read this Request for Qualifications and its provisions, terms, and conditions covering the equipment, materials, supplies or services as called for, and fully understand the requirements and conditions. We certify that this proposal is made without prior understanding, agreement, or connection with any corporation, firm, entity, or person submitting a proposal for the same goods/services (unless otherwise specifically noted), and is in all respects fair and without collusion or fraud. We agree to be bound by all of the terms and conditions of this Request for Qualifications and certify that we are authorized to sign this proposal for the Respondent.

IT IS THE RESPONDENT'S RESPONSIBILITY TO ASSURE THAT HIS/HER SEALED PROPOSAL IS DELIVERED AT THE PROPER TIME TO THE AUTHORITY. PROPOSALS WHICH FOR ANY REASON ARE NOT SO DELIVERED WILL NOT BE CONSIDERED.

EXHIBIT B

KEY PERSONNEL
For
REGIONAL WATER SUPPLY PLAN UPDATE

The Consultant's proposed project team/key personnel are to be indicated below. The Consultant's 'Project Officer' shall also be identified.

Person's Name	Job Classification	Area of Expertise	Office Location
Gregg Jones, PhD PE	Program Manager II/ Technical Director	Project Officer, Water Supply Planning	Riverview, FL
Stephanie Fidler	Natural Resources Southeast Business Unit Leader	Principal In Charge	Riverview, FL
Jason Early, PG	Senior Hydrogeologist	Groundwater Modeling	Ashland, VA
David Kelly, PG	Senior Consultant	Demand Management, Water Conservation, Groundwater Modeling	Riverview, FL
Martin Kelly, PhD	Environmental Scientist	Surface Water MFL Evaluation	Riverview, FL
Joshua Yates	Project Scientist/ Geologist	Groundwater Modeling	Riverview, FL
Chris Badggett, PE, ENV SP	Chief Engineer	W/WW Systems Engineering	Tampa, FL
Tom Friedrich, PE, BCEE	Senior Consultant	W/WW Mater Planning	Tampa, FL
Erin Hunt, PE	Managing Director	Environmental Engineer	Tampa, FL
Terri Lowery	Sr. Vice President	Community/PR/Funding	Gainesville, FL

EXHIBIT C

SWORN STATEMENT PURSUANT TO SECTION 287.133(3)(a), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted to the WITHLACOOCHEE REGIONAL WATER SUPPLY AUTHORITY by Gregg Jones, PhD, PG / Water Resources Technical Director
(Print individual's name and title)

for Cardno, Inc.
(Print name of entity submitting sworn statement)

whose business address is 3905 Crescent Park Drive, Riverview, FL 33578
and (if applicable) its Federal Employer Identification Number (FEIN) is 45-2663666
(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement: na .

2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or of the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(l)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an "affiliate" as defined in Paragraph 287.133(l)(a), Florida Statutes, means:

a) A predecessor or successor of a person convicted of a public entity crime; OR

b) An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm=s length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public

entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members and agents who are active in management of an entity.

6. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (**Indicate which statement applies.**)

X Neither the entity submitting this sworn statement, nor any of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, nor any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

___ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989. However, there has been a subsequent proceeding before a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (**Attach a copy of the final order.**)

I UNDERSTAND THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017 FLORIDA STATUTES FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

_____
(Signature)

STATE OF Florida

COUNTY OF Hillsborough

Sworn to and subscribed before me this day of 2017. Personally known known
OR produced identification _____
(Type of Identification)

KELLIE J. ABBOTT
MY COMMISSION # GG 129440
EXPIRES: November 28, 2021
Bonded Thru Notary Public Underwriters

Kellie J Abbott
Notary Public

Name (Printed) Kellie J Abbott

My commission expires 11/28/2021
(Printed typed or stamped Commissioned name of Notary Public)

Appendix A
STAFF RESUMES

Gregg W. Jones, PhD, PG

Project Role
Project Officer, Demand Management/ Water Conservation

Current Position
Technical Director - Water Resources, Vice President

Discipline Areas
> Water Supply Planning & Development
> Aquifer Storage & Recharge
> Groundwater Withdrawal Impact Analysis
> Goundwater Water Quality Assessment & Protection

Years' Experience
32

Joined Cardno
2007

Education
> PhD, Geology, University of South Florida, 2015
> MS, Hydrogeology, Geophysics, University of South Florida, 1986
> BS, Geology, Florida Atlantic University, 1983
> Coursework Completed, Environmental Studies, Tropical Botany Specialization, Florida International University, 1981

Summary of Experience

Dr. Gregg Jones has over 32 years of experience in water resource disciplines that include hydrogeology, hydrology, water quality, geochemistry, and water supply and water conservation planning. He is a recognized expert on the hydrogeology and geochemistry of karst regions and the flow, water quality, and protection of springs.

He was employed by the Southwest Florida Water Management District for 22 years in diverse roles ranging from principal investigator for groundwater quality issues to director of the Water Resource Assessment Department. In this role he supervised over 60 engineers and hydrogeologists involved in the assessment of the water supply potential of rivers, lakes, and aquifers; establishment of minimum flows and levels; and development of regional water supply plans.

Dr. Jones left the public sector in 2007 and joined Cardno as a Water Resources Technical Director. He now manages a staff of 15 hydrogeologists and engineers involved in projects that include modeling investigations of the impacts of groundwater withdrawals on water resources, investigation of regional saltwater intrusion in coastal aquifers, development of alternative water supplies, and permitting of large infrastructure projects in sensitive karst regions.

Experience

Water Resource/Water Supply Assessment

Development of Saltwater Intrusion Minimum Aquifer Levels, Northwest Florida Water Management District

Developed strategies to minimize the impact of saltwater intrusion in the Floridan aquifer in the western Florida Panhandle. The project is a five-year effort that is divided into three phases. Monitor well construction and testing to characterize aquifer hydraulic characteristics and water quality, construction of sophisticated regional groundwater flow and solute transport models to predict how current and projected groundwater withdrawals will affect the movement of saltwater in the Floridan aquifer, and use of the results of modeling to maximize groundwater withdrawals while minimizing the inland movement of saltwater in the aquifer.

Development of a Water Supply Plan for the Withlacoochee Regional Water Supply Authority (WRWSA)

Developed the WRWSA's 2015-2035 Water Supply Plan. A complex series of tasks was required to complete the plan including 1) population and water demand projections, 2) assessment of the quantity of water to be conserved or made available through conservation, reclaimed water, surface water, seawater, and groundwater, 3) modeling to delineate areas where Upper and Lower Floridan aquifer wellfields could be developed, 4) development of water supply options to use reclaimed water, river water, desalinated seawater, and groundwater, and 5) development of estimates of required infrastructure, costs, customer bases, and permitting requirements for the water supply options.

Water Resource Assessment, Suwannee River Water Management District

Assessed the effects of projected groundwater and surface water withdrawals on proposed and established MFLs for lakes, wetlands, streams, and springs. The assessment included evaluation of all potential sources in the District that could provide water for users and the development of project concepts to utilize those sources.

Professional Registrations

> Professional Geologist, Florida, No.1475

Upper Santa Fe River Basin Water Resource Assessment, Suwannee River Water Management District

Led a team of scientists and engineers that used sophisticated statistical analyses and groundwater flow modeling to assess how regional groundwater withdrawals were impacting lakes, wetlands, streams, and springs in the Upper Santa River Basin.

Groundwater Quality

Investigation of the Hydrogeology and Water Quality of Major Springs Systems, Southwest Florida Water Management District (SWFWMD)

While at the SWFWMD, led efforts to determine the cause of increasing nitrate levels in major spring. Established river sampling stations and monitor well networks, analyzed and mapped aquifer flow systems, analyzed water quality trends and relationships, inventoried nitrate sources, developed loading assessments, identified travel times and nitrate sources using isotopic ratios, and developed strategies to reduce nitrate levels.

Hydrogeology

Evaluation of Karst Geology for the Sabal Trail Natural Gas Pipeline, Spectra Energy

Evaluated geologic risk factors for construction and operation of a 500-mile natural gas pipeline in Alabama, Georgia and Florida. Conducted geological analysis of karst terrains and developed reports to support permitting. Provided expert witness testimony during an administrative hearing. Delivered a presentation to high-level EPA officials to address comments made in a 28 page letter, which concluded that the pipeline would have unacceptable impacts in the karst of north Florida and south Georgia. The presentation was instrumental in convincing EPA to withdraw the letter.

Instream Flow Analysis

Review of Draft Minimum Flows Report, Lower Santa Fe River, Suwannee River Water Management District

Performed an in-depth review of the draft minimum flows report for the Lower Santa Fe River and associated springs. Reviewed the methodology for setting the minimum flow for the river, evaluated period of record flow data for over 20 springs, evaluated the individual contribution of each spring to overall river flow, and made a number of recommendations for revising the springs minimum flow methodology.

Oversight of MFLs Program, Southwest Florida Water Management District (SWFWMD)

As director of the Water Resource Assessment Department at SWFWMD, was responsible for the program to establish MFLs for the District's major rivers, aquifers, springs, lakes and wetlands. Provided oversight of environmental scientists and engineers who conducted the technical analysis, reviewed technical reports for proposed MFLs, ensured that the program was on schedule, managed the budget, and provided progress updates and results to the District's executive staff, governing board, and elected officials.

Stephanie Fidler

Project Role
Principal In Charge

Current Position
Southeast Business Unit Leader
Senior Consultant, Principal

Discipline Area
- Project Management and Program Management
- Business Development
- NEPA Evaluations
- Wetland and Wildlife Permitting
- Permit Compliance
- Wetland Delineation/ Hydroperiod Determination
- Wetland Ecology & Assessment
- Wildlife Ecology
- Quality Assurance

Years' Experience
15

Joined Cardno
2006

Education
- BS, Horticulture, Virginia Polytechnical Institute and State University, 2001

Summary of Experience

Ms. Stephanie Fidler has over 15 years of experience in environmental consulting and serves as the Southeastern Business Unit Leader at Cardno. She leads Cardno's Oil and Gas client sector in the Science & Environment Division and participates in several other client sectors across the country. Ms. Fidler supports business development for a variety of Cardno's service lines including environmental permitting, environmental impact assessments, groundwater and surface water management, water supply, cultural resources, environmental restoration, and natural resource management. She coordinates and collaborates with other area business line leaders to maximize cross-selling and to offer integrated services to clients. Ms. Fidler actively participates in business development strategies and provides input to the executive management team. She builds relationships with key clients, industry organizations, teaming partners, and stakeholders to identify opportunities and grow the business for Cardno.

Ms. Fidler is skilled at managing budgets and staff resources for large- and small-scale projects for several service lines across the firm. She has experience working in the natural gas transmission, renewable energy (biofuels), water resources, mitigation/ conservation banking, and private development industries. She prepares high-level budgets, feasibility assessments, and constraints analysis for these industry projects.

Ms. Fidler specializes in business development, project and program management, environmental due diligence, environmental permitting, wetland delineations, listed species assessments, and ecological site assessments across the United States. She manages Federal Energy Regulatory Commission (FERC) regulated projects that involve environmental report preparation, Section 7 protected species consultation, U.S. Army Corps of Engineers (USACE) Section 404 permitting, state and local permitting, and biological field surveys.

Ms. Fidler works closely with large land owners to perform constraints analysis for their property to help determine permit coordination for future land use planning. She is well versed in state and local regulations in numerous states across the Southeastern United States. Ms. Fidler is involved in a variety of projects to advise clients on sensitive resources such as water, wildlife, and wetlands. She provides planning level analysis to clients for potential revenue sources and future project requirements.

Significant Projects

Permitting

Project Manager – Sabal Trail Project, FERC 7(c) Natural Gas Pipeline – Alabama, Georgia, and Florida

The project consisted of approximately a 515-mile new natural gas pipeline originating in Alabama and terminating in central Florida. As Project Manager, responsibilities included oversight of field surveys (wetlands, water bodies, protected species, and their habitats); agency consultation; the National Environmental Policy Act (NEPA) process through the FERC Pre-filing process; report and permit application development; species-specific surveys; mitigation, monitoring, construction, and restoration plans; among other responsibilities.

Project Sponsor/Manager – Eagle LNG, FERC 3 (a) LNG Export Facility – Duval County, Florida

Ms. Fidler is the Project Sponsor and Manager for the proposed liquefied natural gas (LNG) facility in Jacksonville, Florida. Eagle LNG Partners is constructing a new facility located in the Port of Jacksonville, Florida, along the St. Johns River. This regional LNG project will potentially supply clean-burning, competitively-priced fuel for the marine, transport trucks, remote power, rail, and oil and gas service industries. Current activities include FERC licensing, NEPA document preparation, environmental and gopher tortoise (GT) permitting, GT relocation services, assistance with final site plan development, and state and federal environmental permitting.

Project Manager – Natural Gas and Oil Pipeline Confidential Siting/Feasibility Assessments – Various Projects, United States

Ms. Fidler served as Project Manager conducting desktop feasibility/constraints assessments for various oil and gas pipeline projects located across the United States. The purpose was to identify potential issues/environmental constraints associated with the projects. Duties involved project oversight, identification of environmental constraints, cost estimation, burn rates, and schedule development.

Project Manager – Latt Maxcy Ranch Northern Everglades Public Private Partnership (NE PPP) – Osceola County, Florida

Ms. Fidler serves as the Project Manager for the Cardno team. Cardno is supporting the Latt Maxcy Corporation in the process of obtaining entitlements and related environmental approvals for the NE PPP project on the Latt Maxcy Ranch. The project is approximately 9,175 acres located in Osceola County, Florida. The project consists of the construction of a series of berms and control structures for the dispersed water storage project, which is the term for the various categories of surface water attenuation projects on private agricultural lands, and will enhance water quality through natural biological processes on agricultural lands. Services for the project include agency consultation support, threatened and endangered species surveys and evaluations, archaeological and historic resource surveys and evaluations, Phase I/II Environmental Site Assessment (ESA), design and engineering, and environmental permitting for the project.

Project Manager – Brighton Valley Dispersed Water Project – Highlands County, Florida

Ms. Fidler serves as the Project Manager for the permitting of an 8,000-acre dispersed water management project located in Highlands County, Florida. She is assisting the landowner in obtaining the necessary state and federal permits. Ms. Fidler oversaw the state and federal wetland determinations, all required listed species surveys, and cultural resource reconnaissance efforts. Numerous negotiations took place with the U.S. Fish & Wildlife Service (USFWS), USACE, State Historic Preservation Office (SHPO), Natural Resources Conservation Service (NRCS), and South Florida Water Management District (SFWMD) to determine a preliminary design that would minimize impacts to onsite resources. Brighton Valley is identified as a project under development by the coordinating agencies (SFWMD, Florida Department of Environmental Protection [FDEP], and Florida Department of Agricultural and Consumer Services [FDACS]) in FDEP's Lake Okeechobee Basin Management Action Plan (BMAP), December 2014. The purpose of the Brighton Valley project is to provide regional water treatment on land currently used for agricultural purposes.

Project Manager – Northern Everglades, Payment for Environmental Services (NEPES) Project – Glades County, Florida

Ms. Fidler served as the Project Manager for the permitting of a 16,000-acre dispersed water management project located in Glades County, Florida. She is assisting the landowner in obtaining the necessary state and federal permits. Ms. Fidler performed

the state and federal wetland determinations, all required listed species surveys, and cultural resource reconnaissance efforts. Numerous negotiations took place with the USFWS, USACE, SHPO, NRCS, and SFWMD to determine a preliminary design that would minimize impacts to onsite resources. The project was part of a payment for Environmental Services Program and was designed to store and treat 30,300 acre-foot of water on private ranchlands near Lake Okeechobee to improve water quality to the lake and adjacent wetland systems.

Project Manager – Duke Energy Transmission Line Construction/Rebuild/Pole Replacement Projects – Florida

Ms. Fidler served as the Project Manager to assist Duke Energy Florida in listed species surveys, wetland delineation, and hydroperiod assessments on new transmission line construction, existing transmission line rebuilds, and pole replacement projects. Environmental permits were obtained for wetland impacts, listed species management and protection, and gopher tortoise relocation. Listed species surveys included surveys for bald eagle nests, gopher tortoise burrows, federally listed plants, red-cockaded woodpecker nest cavities/colonies, and wading bird colonies. As part of the permitting process, Ms. Fidler oversaw the preparation of Individual and Nationwide permits from the USACE, General and Individual Permits from the FDEP, Gopher Tortoise Temporary Exclusion Permits for Linear Utility Projects from the Florida Fish and Wildlife Conservation Commission (FWC), and management plans for various Federally listed species with the USFWS.

Certifications

> FDEP Qualified Stormwater Management Instructor #444, 2008
> FDEP Qualified Stormwater Management Inspector #10359, 2005
> MSHA Certified Instructor, 2009
> Heart Saver/CPR, 2010
> Wilderness First Aid, 2008
> MSHA Certification, 2010

Jason Early, PG

Current Position
Senior Hydrogeologist

Discipline Areas
> Groundwater Modeling
> Groundwater Withdrawal Permitting
> Water Conservation & Management Plans
> Hydrogeologic & Remedial Investigations
> Aquifer Testing

Years' Experience
20

Joined Cardno
2016

Education
> MS, Geology, West Virginia University, 2005
> BS, Geology, The College of William and Mary, 1997

Professional Registrations
> Professional Geologist, No. 1657, Virginia, 2005
> Professional Geologist, No. 2231, North Carolina, 2009
> Professional Geologist, Pennsylvania, No. 5027, 2012

Affiliations
> Eastern Virginia Groundwater Advisory Committee Alternative Sources Workgroup Member
> National Groundwater Association
> Virginia Chapter,

Summary of Experience

Mr. Early is a Senior Hydrogeologist with 20 years of specializing in groundwater modeling, groundwater withdrawal permitting, water conservation and management plans, hydrogeologic and remedial investigations, and aquifer testing. He has represented a variety of clients ranging from agricultural, power generation, small water systems, industrial/ manufacturing, defense contractors, and state and local government.

Virginia Water Resources Experience

Mr. Early has been at the forefront of the Eastern Virginia Groundwater Management Area expansion, working with Virginia DEQ staff to understand how existing users will be incorporated into the program and participating in workshops. In 2013, he presented to several facilities on the groundwater withdrawal permit application process and compliance requirements. In 2014, Mr. Early completed training on the Coastal Plain groundwater model used by DEQ to evaluate withdrawal applications, and is consequently certified by DEQ to submit modeling simulations on behalf of permit applicants. In 2015, he was selected to participate in the Eastern Virginia Groundwater Management Advisory Committee (EVGMAC) Workgroup #1 to help identify alternate water sources and presented on artificial aquifer recharge to the Workgroup in September 2015. In December 2015, he gave a presentation to the EVGMAC Trading Workgroup showing how the effects of groundwater withdrawals in Virginia's Coastal Plain depend not only on the magnitude of the withdrawal but also the geographic location of the withdrawal. In 2017, Mr. Early attended a reception at the Virginia Governor's Mansion honoring the EVGMAC for making positive changes for the Virginia Coastal Plain aquifer system.

Significant Projects

Water Resources

Groundwater Source Evaluation and Groundwater Withdrawal Permitting, Eastern Middlesex Water System, Middlesex County, VA (2016-Current)

Reviewed well construction details, aquifer information, specific capacity, and water quality information for approximately 80 existing water wells for possible use as a source for a regional public water system for the eastern section of Middlesex County, Virginia. The project identified two unused wells in the Potomac aquifer with safe yield exceeding 800+ gpm each and with excellent water quality. Mr. Early ran several VAHydroGW model simulations to evaluate the potential impacts of these source wells on the aquifer and existing groundwater users. Cardno's client and teaming partner, Bowman Consulting Group, developed a PER and successfully applied for USDA and VDH project funding. As a result of Mr. Early's Source Evaluation and the PER, the project will receive approximately $3M in grant funding and approximately $14M in low interest loans from USDA. Mr. Early is currently preparing the DEQ Groundwater Withdrawal Permit Application, which will include an aquifer test for DEQ and a simultaneous yield and drawdown test for VDH.

Groundwater Exploration Study, Midland Service District Fauquier County, VA (2017-Current)

Conducted research on background hydrogeologic information and a fracture trace/lineament analysis for the approximate ~1,500 acre study area. Ran Electrical Resistivity geophysical surveys and identified 9 potential target locations for test wells. Currently drilling test wells at 4 of the potential target locations identified by the fracture trace and geophysical surveys.

Limited Hydrogeologic Assessments for Subdivision Expansions, Fauquier County, VA (2017)

American Water Works Association
> Virginia Water Environment Association
> American Institute of Professional Geologists
> Virginia Manufacturers Association, EHS&S Committee Member
> Richmond Development Community Executive Committee Member
> Greater Richmond Association for Commercial Real Estate

Certifications
> OSHA – 40 Hour HAZWOPER Training (1997)
> OSHA – 8 Hour HAZWOPER Refresher Training (2017)

Assisted Fauquier County's Department of Community Development in developing a new section of the subdivision ordinance that allows an existing subdivision to conduct a limited hydrogeologic assessment for small property modifications (e.g., subdividing one parcel) in lieu of comprehensive geologic testing. Conducted Limited Hydrogeologic Assessments for two existing subdivisions on behalf of the County.

Hydrogeologic Testing Requirements, Subdivision Ordinance, Fauquier County, VA (2017)
Assisted Fauquier County's Department of Community Development in revising their hydrogeologic testing requirements under the subdivision ordinance. Developed a standard approach to groundwater exploration and aquifer testing.

Preliminary Assessment of Artificial Aquifer Recharge, Hanover County, VA (2014-2015)
Prepared a DEQ Coastal Plain model simulation of a hypothetical 2.5-MGD artificial recharge (AR) project for Hanover County's Department of Public Utilities. This preliminary study included a fixed-radius well search inventory, an explanation of potential benefits, and meetings with EPA's Underground Injection Control (UIC) Program and DEQ Groundwater Withdrawal Permitting Program (GWWP) staff to determine how an AR project would be authorized. The modeling analysis included simulations of 1-MGD and 2.5-MGD recharge scenarios, evaluation of aquifer critical areas, and simulation of potential groundwater level rebounds following AR implementation.

Miscellaneous Community Water System Projects, Aqua VA (2016)
Prepared DEQ Groundwater Withdrawal Permit modifications for production well replacements at multiple community water systemsOversaw well drilling and abandonments and coordinated with DEQ's Groundwater Characterization Geologist on cuttings and geophysical log interpretation to determine aquifer picks and associated well construction requirements. Assisted the water engineering team on a waterline interconnection project combining source water for two community water systems.

Groundwater Withdrawal Permit Applications, Smithfield Hog Production Farms & Feedmill (2015-Current)
Prepared 10 DEQ GWWP applications including comprehensive WCMPs for 20 hog farms and one feedmill facility. Oversaw drilling of replacement well and coordinated with DEQ's Groundwater Characterization Geologist on cuttings and geophysical log interpretation to determine aquifer picks and associated well construction requirements.

Groundwater Withdrawal Permit Application, Surry County, Virginia Public Schools (2014-Current)
Prepared the DEQ GWWP application including a comprehensive WCMP for the three-school system. The application included projections of water usage based on population changes, the addition of an athletic field irrigation well, and a proposed school bus garage and maintenance shop. Recently developed a Subsurface Leak Detection Protocol that includes a model to trigger notifications of increased water usage and mapping of underground waterlines.

Groundwater Modeling and Withdrawal Permitting, Virginia Institute of Marine Science (2016)
Ran VAHydroGW model simulations of various pumping scenarios for the apportionment of water supply between shallow and deep wells at the Virginia Institute of Marine Science. Prepared the DEQ Groundwater Withdrawal Permit application including a comprehensive Water Conservation and Management Plan and Justification of Needs consisting of water quality and economic demonstrations.

Well Siting and Groundwater Resource Development, Proposed Community Water System (2015-2017)
Conducted preliminary recharge estimates in support of an Aquifer Testing Plan for a proposed 116-connection community water system in Orange County, Virginia. Assisted with the 72-hour aquifer test fieldwork and analyzed test results. Developed a groundwater flow model to delineate the Area of Impact within the aquifer for the public water system.

David Kelly, PG

Project Role
Population, Water Demand Projections, Demand Management/Water Conservation, Groundwater Modeling

Current Position
Senior Consultant

Discipline Area
> Project Management
> Hydrologeologic/Water Resource Investigations/ Supply Planning
> Groundwater Flow Modeling and Analysis
> MFL Impact Analysis
> Resource Vulnerability Analyses
> Water Quality Monitoring
> Alternative Water Supply Planning
> Site Suitability Analysis & Modeling
> Water Quality/ Flow Modeling
> Groundwater Flow Modeling & Integration with GIS
> Environmental/ Contamination Assessments
> Sustainability Analysis
> GIS/GPS Technology
> Water Use Permitting

Years' Experience
20

Joined Cardno
2007

Education
> BS, Geosciences, State University

Summary of Experience

Mr. Kelly is a senior project manager with 20 years of hydrogeologic and water resources permitting experience. He has extensive experience in water supply planning, hydrogeologic investigations, water use permitting, groundwater modeling, minimum flow and level (MFL) impact analysis, production and monitoring well network design, aquifer performance tests, and geophysical logging. Mr. Kelly is experienced is preparation of environmental impact statement (EIS) alternatives analysis and national environmental policy act (NEPA) document preparation. Mr. Kelly is a licensed professional geologist in the states of Florida, North Carolina, and Texas.

Significant Projects

Senior Project Manager – City of North Port Aquifer Storage and Recovery (ASR) Permitting and Cycle Test – Sarasota County, Florida (2015-Current)

Mr. Kelly is the project manager oversee hydrogeologic, engineering and permitting services for the development of the City of North Port Utilities Aquifer Storage and Recover (ASR) system. Cardno is helping the City develop an alternative water supply which will allow for the storage of raw surface water into an underground source of drinking water (USDW). The surface water will be stored underground until needed to supply the City's Myakkahatchee Creek water treatment plant during the dry season (Oct-May) or peak demands. Cardno will design and oversee construction of the surface water intake, filtration, well recharge, and recovery systems. Mr. Kelly will conduct operational testing of the system which will include the recharge of 120 - million gallons of surface water with initial recovery of 60 million gallons in the summer-fall of 2018. This testing builds upon previous cycle testing M r. Kelly managed and completed in December 2016.

This is an innovative project as it is the first ASR system in the southeast to use raw surface water for recharge of a USDW. This project has provided opportunities for Cardno to bring state-of-the-art approaches to utilizing a highly urbanized watershed with excessive fluctuations in flow as a source of recharge water. Cardno is also providing innovative solutions to the challenge of arsenic mobilization that occurs due to the introduction of oxygenated surface water into the carbonate based aquifer storage zone.

Senior Project Manager-Northwest Florida Water Management District, Saltwater Intrusion - South Alabama—Florida Panhandle (2015-2017).
The Northwest Florida Water Management District (District) contracted with Cardno to develop strategies to minimize the impact of saltwater intrusion in the Floridan aquifer in the western portion of the Florida Panhandle. In this effort, Mr. Kelly was the project overseeing the development of a regional integrated groundwater and surface water flow model using MODFLOW-Unstructured Grid (USG), and model report documentation. The model domain expanded from Florida panhandle thru south Alabama. The model will be used for Minimum Flows and Levels (MFL) development as well as regulatory permitting purposes. Mr. Kelly is also overseeing the effort to design and construct four (4) deep Floridian aquifer long term monitoring well stations and associated shallow zone monitoring wells, geophysical logging, conducting aquifer performance testing and project reporting documentation. The development of the model and long term monitoring well network will help the District monitor saltwater intrusion, while optimizing

College of New York at Buffalo, 1995

Professional Registrations

> Professional Geologist, Florida License No. 2628
> Professional Geologist, North Carolina License No. 2321
> Texas Registered Professional Geologist, License 11253

Affiliations

> Water Environmental Federation
> American Institute of Professional Geologists

groundwater withdrawals and minimizing deleterious effects from the inland movement of saltwater in the Floridan aquifer.

Senior Project Scientist – Withlacoochee Regional Water Supply Authority (WRWSA) 2015-2035 Water Supply Plan, Lecanto, Florida (2013-2014)

Mr. Kelly worked as a team member to help develop the WRWSA 2015-2035 Water Supply Plan. This work included developing 20-year population and water use projections for the entire service area which includes portions of Southwest Florida and St. Johns River Water Management Districts. These projections were incorporated into the expanded North District regional groundwater flow model to determine availability of groundwater supplies and evaluate impacts to established and proposed minimum flows and levels (MFLs) for springs and rivers. Mr. Kelly also used the expanded North District model to delineate where Upper and Lower Floridan aquifer wellfields could be developed without violating MFLs. Mr. Kelly helped evaluate the use of alternative water supplies such as reclaimed water, river water, and seawater in addition to the use of the Upper and Lower Floridan aquifer. This work also included helping to develop cost associated with each of the water supply options.

Senior Project Scientist – Suwannee River Water Management District (SRWMD)– Water Supply Assessment and Planning (2009-2010)

Mr. Kelly worked as a team member to help prepare the SRWMD Water Supply Assessment for the 2010-2030 planning period. This work included helping develop 20-year population and water use projections for the entire District and using the projections in the North Florida regional groundwater flow model to determine availability of groundwater supplies and to determine whether minimum flows and levels for springs and rivers in the SRWMD had been exceeded or when they would be exceeded if demand continued to be met with groundwater. This effort lead to development of the Upper Santa Fe River Basin Regional Water Supply study. Mr. Kelly worked to help identify, investigate, and provide preliminary costs to develop sustainable alternative water supply scenarios for the SRWMD. These scenarios included options such as harvesting surface water from rivers during high flow periods, using reclaimed water to offset irrigation needs, artificially recharging groundwater, and implementing water conservation strategies for agricultural and public water supply users.

Senior Project Scientist -Eagle LNG Partners, LLC, Jacksonville Project – Florida (2014 – 2017)

Provided support for Eagle liquefied natural gas (LNG) facility (Jacksonville FL.) Resource Report (RR) in compliance with the requirements of the Federal Energy Regulatory Commission. (FERC). Mr. Kelly oversaw the groundwater evaluation for the RR, which included groundwater flow, quality, and construction impacts and mitigation.

Senior Project Scientist -Tennessee Valley Authority, Boone Dam Seepage Remediation EA, Tennessee (2015 – 2016.)

TVA proposed to remediate seepage of water at Boone Dam by constructing a composite seepage barrier from the crest of the dam embankment downward into the foundation soils, epikarst, and underlying bedrock. As team member, Mr. Kelly helped prepare the geologic resource evaluation as well as evaluated impacts to flows, water quality and water supply from the Proposed Action and the No-Action Alternative.

Marty Kelly, PhD

Project Role
Surface Water MFL Evaluation

Current Title
Environmental Scientist

Discipline Areas
> Environmental Services
> Water Resource Regulatory
> Permitting
> Environmental Flows
> Hydrology
> Zoology
> Limnology
> Aquatic Ecology

Years' Experience
40

Joined Cardno
2017

Education
> PhD, Zoology, Southern Illinois University
> MA, Biological Sciences, University of North Texas
> BA, Biology, University of North Texas

Professional Affiliations
> North American Lake Management Society, Florida chapter; Treasurer and Member of Executive Board (1998-2000)
> LakeLine (1995-2000), Assistant Editor
> Lake and Reservoir Management Journal (Assistant Editor

Summary of Experience

Dr. Kelly has extensive field, supervisory, and project management experience as well as 40 years of experience working with environmental and water resource regulatory agencies. With Cardno, Dr. Kelly's responsibilities include development of environmental flow recommendations such as minimum flows and levels (MFL), in-stream flow assessments, and development of watershed management plans/recovery strategies and related analyses. Since joining Cardno in May 2017, Dr. Kelly participated with staff in completing the Lower Hillsborough River Dissolved Oxygen Study. Cardno developed an analysis plan for the Lower Hillsborough River Dissolved Oxygen Study that identified three specific research questions to be addressed with data analyses. The final report addressed three major questions: does DO stratification and/or hypoxia exist in the Lower Hillsborough River; does DO change over time, and if so, can the change be attributed to implementation of minimum flows in the Lower Hillsborough River; and how does DO in the Lower Hillsborough River compare to DO above the dam.

Significant Projects

Principle Technical Professional - Atkins, North America, Peer Review Report for the Middle Suwannee River and Springs, Polk County, FL) (2012 – 2017)

As a sub-consultant to Cardno, Dr. Kelly assisted in the development of the Peer Review Report for The Middle Suwannee River and Springs for the Suwannee River Water Management District. While at Atkins, he prepared watershed management plans for a number of lakes in Polk County, Florida, and worked extensively on environmental flow issues on the Apalachicola-Chattahoochee-Flint (ACF) River system, including an assessment of flow-induced salinity changes on oyster habitat availability under various flow regimes. Atkins team members, working for the ACF stakeholder group, have made environmental flow recommendations for various segments of the Apalachicola, Chattahoochee and Flint Rivers including Apalachicola Bay for consideration in developing a sustainable water management plan for the entire 20,000-square-mile watershed. Dr. Kelly has also prepared sections to an update of the Peace River/Manasota Regional Water Supply Authority's integrated regional water supply plan. As part of a four-member peer review team, Dr. Kelly prepared a report to the California State Water Resources Control Board entitled "Regional Instream Flow Criteria for Priority Tributaries to the Sacramento-San Joaquin Delta. *(Prior to joining Cardno)*

Program Director - Minimum Flows and Levels Program, Southwest Florida Water Management District, 16 Counties, West-Central FL (1998 – 2011)

Served as program director managing 14 technical and professional staff members. Responsible for establishing legislatively mandated minimum flows and levels (MFL) on lakes, wetlands, streams, and estuaries. His staff established MFLs according to a Board-adopted priority list. The District's budget for MFL establishment ranged from approximately $1 million to $5.5 million between 1998 and 2007. Under Dr. Kelly's direction, staff developed and implemented a habitat-based approach for assessing environmental flows on lakes, streams, and estuaries. As of December 2011, 181 MFLs were adopted by Southwest Florida Water Management District (SWFWMD)—the most of any water management district in the state. MFLs developed by SWFWMD scientists for rivers in this district now routinely include the use of physical habitat simulation (PHABSIM) modeling for evaluating impacts on river flows—a first for Florida rivers. To our knowledge, MFL recommendations developed for the Homosassa and Chassahowitzka Rivers (two coastal spring systems) included for the first time the use of projected sea-level rise as a consideration when developing environmental flow

(1996-present), and Board Member and Editor of Newsletter (1987-1994)

Honors and Awards

- Friend of NALMS Award, 2010
- Technical Merit Award for Research given to District for MFL work, 2007
- Richard Coleman Aquatic Resources Award from Florida Lake Management Society, 2004
- Florida Lake Management Society's Service in Government Award, 1998

recommendations. All MFL support documents developed by Dr. Kelly and his staff were submitted for independent scientific peer review, and all documents and reviews were posted on SWFWMD's website upon completion. *(Prior to joining Cardno)*

Senior Environmental Scientist - Southwest Florida Water Management District, Surface Water Improvement and Management Section, FL (1987-1998)

As a senior environmental scientist with the Surface Water Improvement and Management (SWIM) section, developed and implemented management plans for four of the District's nine priority water bodies. Management plan development and implementation involved the drafting of a detailed management plan for the subject water body as required in the SWIM Act of 1987. Conducted all necessary committee meetings, public meetings, and public hearings required to adopt a plan pursuant to state statutes, and developed scopes of work and contracts necessary to implement the various projects outlined in each of the four plans. Projects included diverse topics such as development of model ordinances to protect water bodies, hydraulic dredging of all sediments (1 million cubic yards) from a 250-acre lake, development of a linked watershed/water body model, study of potential sources of nitrate in groundwater and their effect on water body nutrient budgets, use of biocontrol organisms to control exotic aquatic plants, development of a periphyton filter system for nutrient removal, design and construction of stormwater treatment systems, and typical diagnostic and feasibility studies. Served as lead technical advisor to Lake Panasoffkee Restoration Council, established by the Florida Legislature to develop and implement a whole lake restoration strategy for an economically important 4,000-acre lake in Sumter County. Also designed a four-step whole lake dredging project (8.2 million cubic yards) that was implemented over a 6-year period at a cost of $26 million.

Environmental Specialist Supervisor - Pinellas County Department of Environmental Management, Pinellas County, FL (1987)

Pinellas County implemented a new program of diagnostic studies on Allen's Creek. As environmental specialist supervisor, developed a scope of work and quality assurance plan for the environmental study. Also supervised section employees.

Aquatic Biologist - Illinois Environmental Protection Agency, Marion, IL (1984-1987)

As an aquatic biologist, was involved in data acquisition and analysis for various Illinois EPA programs, and authored or coauthored numerous reports and publications resulting from investigations of limnology of Illinois impoundments, fish-habitat relationships, macroinvertebrate biotic indexes, stream and lake sediment chemistry, and the effects of agricultural land management practices on stream water quality. He was instrumental in upgrading the Agency's macroinvertebrate tolerance classification system, developed classification criteria for stream and lake sediment contaminant concentrations, and was responsible for ambient lake monitoring in the southern one-third of the state. Also served as one of the principal investigators in the U.S. Department of Agriculture-funded Rural Clean Water project (one of only six in the nation).

Contractual Consultant - Illinois Environmental Protection Agency, Marion, IL. (1980-1984)

As a contractual consultant, responsibilities involved intensive monitoring of selected lakes in the southern one-third of the state. Also responsible for statistical analysis and report preparation for six intensively studied reservoirs in southern Illinois, and assisted in data analysis and coauthored a report on statewide monitoring of 63 lakes.

Joshua Yates

Project Role
Groundwater Modeling, Reclaimed Water,

Current Position
Project Scientist

Discipline Area
> Project Management
> Hydrologeologic/Water Resource Investigations/ Supply Planning
> Groundwater Flow Modeling and Analysis
> MFL Impact Analysis
> Resource Vulnerability Analyses
> Water Quality Monitoring
> Alternative Water Supply Planning
> Site Suitability Analysis & Modeling
> Water Quality/ Flow Modeling
> Groundwater Flow Modeling & Integration with GIS
> Environmental/ Contamination Assessments
> Sustainability Analysis
> GIS/GPS Technology
> Water Use Permitting
> Oil Spill Response

Years' Experience
13

Joined Cardno
2006

Education
> MS, Geology, University of South Florida, 2013
> BS, Natural Resources Management and Engineering,

Summary of Experience

Mr. Yates is a project manager with 13 years of hydrogeologic and water resources permitting experience. He has extensive experience in water supply planning, hydrogeologic investigations, groundwater modeling, water use permitting, minimum flow and level (MFL) impact analysis, monitoring well network design, aquifer performance tests, GIS analysis and geophysical logging. Mr. Yates is experienced in preparation of environmental impact statement (EIS) reviews and analysis.

Significant Projects

Project Scientist – City of North Port Aquifer Storage and Recovery (ASR) Permitting and Cycle Test – Sarasota County, FL (2015-Current)

Mr. Yates assists the project manager with oversight of hydrogeologic, engineering and permitting services for the development of the City of North Port Utilities Aquifer Storage and Recover (ASR) system. Cardno is helping the City develop an alternative water supply which will allow for the storage of raw surface water into an underground source of drinking water (USDW). The surface water will be stored underground until needed to supply the City's Myakkahatchee Creek water treatment plant during the dry season (Oct-May) or peak demands. Cardno will design and oversee construction of the surface water intake, filtration, well recharge, and recovery systems. Mr. Yates will aid in the completion of operational testing of the system which will include the recharge of 120 - million gallons of surface water with initial recovery of 60 million gallons in the summer-fall of 2018. This testing builds upon previous cycle testing completed by Cardno in December 2016.

This is an innovative project as it is the first ASR system in the southeast to use raw surface water for recharge of a USDW. This project has provided opportunities for Cardno to bring state-of-the-art approaches to utilizing a highly urbanized watershed with excessive fluctuations in flow as a source of recharge water. Cardno is also providing innovative solutions to the challenge of arsenic mobilization that occurs due to the introduction of oxygenated surface water into the carbonate based aquifer storage zone.

Project Scientist-Northwest Florida Water Management District, Saltwater Intrusion - South Alabama—Florida Panhandle (2015-2017).

The Northwest Florida Water Management District (District) contracted with Cardno to develop strategies to minimize the impact of saltwater intrusion in the Floridan aquifer in the western portion of the Florida Panhandle. In this effort, Mr. Yates was part of the team overseeing the development of a regional integrated groundwater and surface water flow model using MODFLOW-Unstructured Grid (USG), and model report documentation. The model domain expanded from Florida panhandle thru south Alabama. The model will be used for Minimum Flows and Levels (MFL) development as well as regulatory permitting purposes. Mr. Yates provided construction oversight of three of the four deep Floridian aquifer long term monitoring well stations and associated shallow zone monitoring wells. This included the completion of geophysical logging, conducting of aquifer performance testing and project reporting documentation. The development of the model and long term monitoring well network will help the District monitor saltwater intrusion, while optimizing groundwater withdrawals and minimizing deleterious effects from the inland movement of saltwater in the Floridan aquifer.

University of Connecticut, 2005

Training/Certifications

> 40-hour OSHA HAZWOPER Certified
> MSHA Certified
> CPR/First AID
> Incident Command System

Software

> ArcGIS, Including Spatial Analyst
> MODFLOW, MODFLOW USG, MODFLOW SURFACT, Groundwater Vistas and DWRM II/III
> Microsoft Office
> MS Word, Excel, PowerPoint
> Trimble GPS Pathfinder Office
> AGMOD
> Surfer Grid Software
> AQTESTSOLV
> Winflow
> Aquiferwin32

Project Scientist – Withlacoochee Regional Water Supply Authority (WRWSA) 2015-2035 Water Supply Plan, Lecanto, FL (2013-2014)

Mr. Yates worked as a team member to help develop the WRWSA 2015-2035 Water Supply Plan. This work included developing 20-year population and water use projections for the entire service area which includes portions of Southwest Florida and St. Johns River Water Management Districts. Mr. Yates incorporated these projections into the expanded North District regional groundwater flow model to determine availability of groundwater supplies and evaluate impacts to established and proposed minimum flows and levels (MFLs) for springs and rivers. Mr. Yates utilized the expanded North District model to delineate where Upper and Lower Floridan aquifer wellfields could be developed without violating MFLs based on the population and water use projections. This work also included helping to develop cost associated with each of the water supply options.

Project Scientist – Suwannee River Water Management District (SRWMD)– Water Supply Assessment and Planning, FL (2009-2010)

Mr. Yates worked as a team member to help prepare the SRWMD Water Supply Assessment for the 2010-2030 planning period. This work included helping develop 20-year population and water use projections for the entire District and using the projections in the North Florida regional groundwater flow model to determine availability of groundwater supplies and to determine whether minimum flows and levels for springs and rivers in the SRWMD had been exceeded or when they would be exceeded if demand continued to be met with groundwater. This effort lead to development of the Upper Santa Fe River Basin Regional Water Supply study. Mr. Yates worked to help identify, investigate, and provide preliminary costs to develop sustainable alternative water supply scenarios for the SRWMD. These scenarios included options such as harvesting surface water from rivers during high flow periods, using reclaimed water to offset irrigation needs, artificially recharging groundwater, and implementing water conservation strategies for agricultural and public water supply users.

Project Scientist –Latt Maxcy Corporation Ranch Biofuel Project, FL (2010 – 2012)

Mr. Yates calculated detailed water use permit pumpage projections based on proposed biofuel crop demands as part of the water supply and water use permitting process associated with the biofuels project. Mr. Yates incorporated these demand projections into a calibrated regional groundwater model (ECFT and Cypress Lakes Regional Transient Model). Mr. Yates conducted the impact analysis assessment to determine any associated impacts with the proposed biofuel project. Mr. Yates conducted numerous modeling scenarios using the calibrated regional groundwater model in support of a 23 million gallons per day biofuels farm water use permit.

Project Scientist –Circle-K Stores Inc., FL (2015)

Mr. Yates conducted a groundwater modeling investigation to review and evaluate the extent of the Wellhead Protection Area for the South Pasco Wellfield utilizing the SWFWMD's DWRM2 model. Cardno created a FTMR model extrapolated from the DWRM2 regional and local hydrogeologic parameters to calculate the extent of the South Pasco Wellfield Wellhead Protection Area. Cardno incorporated MODPATH particle tracking into the FTMR model to delineate the capture areas of wells located in the South Pasco Wellfield. Cardno delineated 10-year and 5-year capture areas associated with each withdrawal located within the South Pasco Wellfield. The capture areas associated with each well were used to determine the effective Wellhead Protection Areas which were updated by Pasco County based on Cardno's results.

CHRIS BAGGETT, PE, ENV SP

Chief Engineer

Chris Baggett is a Senior Engineer with more than 23 years of experience in planning, design, analysis, and modeling of water, wastewater, and reclaimed water systems. His master planning experience includes small system and large regional systems with over 700,000 customers. His detailed design experience includes piping systems, intake structures, pumping systems, chemical treatment systems, treatment units, mixing systems, storage tanks, control valves, and development of system control strategies. His extensive analysis and modeling experience includes steady-state and transient hydraulic network analysis; water quality distribution system modeling; treatment facility hydraulic profile modeling; cavitation analyses; and design and operational optimization. He offers our clients not only an understanding of infrastructure design but more importantly an in-depth knowledge of how to evaluate systems and facility sites to optimize efficiency and reduce O&M. His software knowledge includes LIQT, HAMMER, WaterCAD/GEMS, SewerCAD/GEMS, H2O MAP Water, H2OMAP Sewer, KYPipe, and MODFLOW.

SELECTED PROJECT EXPERIENCE

Feasibility Analysis and Field Exploration for Flatford Swamp Hydrologic Restoration | SWFWMD | Chief Engineer

Jones Edmunds completed a conceptual design of a surface water recharge project that evaluated the feasibility of using recharge wells to restore the hydrologic period and use the water to recharge the Most Impacted Area (MIA) of the UFA. The project team evaluated recharging potential flows of 30 MGD and obtained a construction and testing permit for an Exploratory Class V Aquifer Recharge well.

Lakeview Hills Water Supply Design | Marion County | Project Manager

Jones Edmunds provided design and permitting services and is currently providing construction-phase services to expand the Marion County Utilities (MCU) water system to serve the Lakeview Hills subdivision and 28 other residential connections in accordance with an agreement between Sunshine Utilities and Marion County Solid Waste Department. The project includes installing a new potable water well and pump, modifying the Spruce Creek WTP, and extending a water main to the Lakeview Hills subdivision.

RESPONSIBLE FOR:
Population, Water Demand Projections

AREAS OF SPECIALIZATION:
- Water System Engineering
- Wastewater System Engineering
- Reclaimed Water System Engineering
- Water Resources Engineering
- Sustainability

YEARS OF EXPERIENCE: 23

YEARS WITH FIRM: 22

EDUCATION:
Bachelor of Science, 1994, Civil Engineering, University of Florida

PROFESSIONAL CERTIFICATION:
Professional Engineer, #56047, 2000, FL

Envision Sustainability Professional Credential, 2016

BRU Reclaimed Water Interconnect | Braden River Utilities, LLC (BRU) | Chief Engineer

Jones Edmunds provided preliminary engineering, final design, contract document preparation, bidding-phase and construction-phase services for the BRU Reclaimed Water Interconnect Project. The project consisted of reclaimed water transmission and distribution lines, pumping facilities, and a storage facility to interconnect with the City of Bradenton reclaimed water system and expand BRU's irrigation storage transmission system.

Southwest Regional Water Reclamation Facility Advanced Wastewater and Reuse Project | Citrus County | Chief Engineer

The Southwest Regional Water Reclamation Facility is an existing wastewater treatment facility owned and operated by Citrus County approximately 3 miles east of the Chassahowitzka River, which has been designated an Outstanding Florida Water. The Chassahowitzka River flows to the Gulf of Mexico and is formed from pristine waters contributed by more than 12 springs. Jones Edmunds recently completed the planning, permitting and design phase of an advanced wastewater treatment plant meeting a 5-5-3 effluent quality to replace the existing WWTF. The project is slated to be completed and operational by summer 2020.

Water and Wastewater Master Plan for the Southwest Regional Utility Service Area (SWRUSA) | Polk County | Chief Engineer

Jones Edmunds provided Potable Water Master Planning for the Southwest Regional Utility Service Area (SWRUSA) of Polk County Utilities. We provided Master Plan services, including population forecasts for SWRUSA, and developed future water demands from the population forecasts. We also conducted a detailed evaluation of the water supply and distribution systems and the Community Investment Program projects to determine their adequacy to meet these future demands. Evaluations were provided for the short term (the next 2 to 5 years) and the long term (10 to 20 years). Chris was the Lead Engineer for all technical modeling efforts and provided direct oversight of the team for the overall master plan development.

Deep Creek RST Final Design | St. Johns County | Senior Engineer

This is the second phase of a project to design modifications to the Deep Creek West (DCW) RST facility. Jones Edmunds worked collaboratively with the County and SJRWMD to develop site investigations, construction drawings and specifications, and opinion of construction cost.

MICHELLE HAYS, MS, PG

Project Scientist

Michelle Hays has extensive experience providing geologic and environmental site assessment services and groundwater modeling support. She has experience performing rapid site assessments, geologic field investigations, and field sampling. Michelle is an expert in the development of hydrologic models including contamination fate and transport simulations. She is currently developing a hydrologic model to simulate the recharge to the Floridan aquifer from rapid infiltration basins.

SELECTED PROJECT EXPERIENCE

Feasibility Analysis and Field Exploration for Flatford Swamp Hydrologic Restoration | SWFWMD | Project Manager

Jones Edmunds completed a conceptual design of a surface water recharge project that evaluated the feasibility of using recharge wells to restore the hydrologic period and use the water to recharge the Most Impacted Area (MIA) of the UFA. The project team evaluated recharging potential flows of 30 MGD and obtained a construction and testing permit for an Exploratory Class V Aquifer Recharge well.

Water and Wastewater Master Plan for the Southwest Regional Utility Service Area (SWRUSA) | Polk County | Project Scientist

Jones Edmunds provided Potable Water Master Planning for the Southwest Regional Utility Service Area (SWRUSA) of Polk County Utilities. We provided Master Plan services, including population forecasts for SWRUSA, and developed future water demands from the population forecasts. We also conducted a detailed evaluation of the water supply and distribution systems and the Community Investment Program projects to determine their adequacy to meet these future demands.Evaluations were provided for the short term (the next 2 to 5 years) and the long term (10 to 20 years).

Keystone Heights Groundwater Modeling | SJRWMD | Project Manager

Jones Edmunds was tasked with developing a three-dimensional transient groundwater model of conditions in the SAS and UFA and LFA in the Keystone Heights area. The model was developed to support the development of MFLs for Lake Brooklyn and Lake Geneva. A crucial part of the model is its capability to actively simulate the interaction between the groundwater system and the lakes including seepage losses from the water bodies to the UFA by simulating changes in aquifer and lake levels.

RESPONSIBLE FOR:
Population, Water Demand Projections

AREAS OF SPECIALIZATION:
- Environmental Site Assessments
- Preparation and Implementation of Groundwater Monitoring Plans
- Groundwater Flow Modeling

YEARS OF EXPERIENCE: 13

YEARS WITH FIRM: 10

EDUCATION:
Master of Science, 2004, Geological Sciences, University of Florida

Bachelor of Science, 2001, Environmental Studies-Earth Sciences, University of Nebraska

PROFESSIONAL CERTIFICATION:
Professional Geologist, #PG2676, 2011, FL

Silver Springs Recharge Feasibility Analysis | SJRWMD | Project Manager

Jones Edmunds used geospatial and surface water routing models to evaluate preliminary feasibility of enhancing groundwater recharge in the Silver Springs springshed using flows and recharge opportunities in Indian Lake Prairie, Gooski Prairie, and nearby public/conservation lands without ecological harm to the Prairies or areas from which water is diverted. We met with SJRWMD to review findings and develop preliminary cost estimates of capital and O&M costs for one of the identified recharge projects. Michelle performed groundwater recharge calculations and assessments for the project.

Lakeview Hills Water Supply Design | Marion County | Project Scientist

Jones Edmunds provided design and permitting services and is currently providing construction-phase services to expand the Marion County Utilities (MCU) water system to serve the Lakeview Hills subdivision and 28 other residential connections in accordance with an agreement between Sunshine Utilities and Marion County Solid Waste Department. The project includes installing a new potable water well and pump, modifying the Spruce Creek WTP, and extending a water main to the Lakeview Hills subdivision. Michelle oversaw the construction of the Upper Floridan aquifer water well.

Water Supply Assistance | Citrus County | Project Manager

Jones Edmunds prepared a letter outlining the County's plan for addressing nutrient loading in the springsheds of three outstanding Florida springs. Jones Edmunds also prepared a letter to the SWFWMD that detailed the status of the County's current Alternative Water Supply projects as required by the District's 2016 Water Supply Plan.

Southwest Regional Water Reclamation Facility Advanced Wastewater and Reuse Project | Citrus County | Project Scientist

The Southwest Regional Water Reclamation Facility is an existing wastewater treatment facility approximately 3 miles east of the Chassahowitzka River. Jones Edmunds completed the planning, permitting and design phase of an advanced wastewater treatment plant meeting a 5-5-3 effluent quality to replace the existing WWTF. The project is slated to be completed and operational by summer 2020.

BRIAN ROSENFELD, MS, GISP

GIS Systems Analyst

Brian Rosenfeld is a GIS Analyst and Project Manager at Jones Edmunds. His experience includes managing field data collection for numerous projects, geodatabase design, GIS implementation, performing imagery and GIS data analysis, as well as aerial photo interpretation and GPS mapping. Brian is also experienced in setting up enterprise GIS systems including ESRI ArcGIS Server and related applications, Cityworks Web Application setup and management, as well as designing geodatabases for use in field data collection for infrastructure related projects. Previous experience includes having identified and evaluated native ground cover; inventoried threatened, endangered, and invasive species on public and private lands; planned and conducted timber inventories on public lands; and mapped roads, trails and infrastructure in environmentally sensitive areas of Florida's State Parks and Forests, National Forests, and National Wildlife Refuges.

SELECTED PROJECT EXPERIENCE

Water and Wastewater Master Plan for the Southwest Regional Utility Service Area (SWRUSA) | Polk County | GIS Analyst

Jones Edmunds provided Potable Water Master Planning for the Southwest Regional Utility Service Area (SWRUSA) of Polk County Utilities. We provided Master Plan services, including population forecasts for SWRUSA, and developed future water demands from the population forecasts. We also conducted a detailed evaluation of the water supply and distribution systems and the Community Investment Program projects to determine their adequacy to meet these future demands.Evaluations were provided for the short term (the next 2 to 5 years) and the long term (10 to 20 years). Brian provided a GIS analysis of TAZ and census data for the design and development of water/wastewater systems that would accommodate projected population growth for Polk County. He also provided support on manipulating GIS data into suitable water/wastewater modeling inputs.

Reclaimed Water Master Plan | City of Plant City | GIS Analyst

The City of Plant City needed to expand its reclaimed water system to address regulatory and growth-related concerns. Jones Edmunds was retained by the City to prepare a Reclaimed Water System Master Plan. In the first phase we developed service-area maps and compiled historical flows, established future growth areas and estimated future flows, developed a list of

RESPONSIBLE FOR:
Population, Water Demand Projections

AREAS OF SPECIALIZATION:
- Geographic Information Systems (GIS)
- Remote Sensing
- Global Positioning Systems (GPS)
- Geodatabase Design
- Asset Inventory

YEARS OF EXPERIENCE: 17

YEARS WITH FIRM: 11

EDUCATION:
Master of Science, 2004, Natural Resources Management, North Carolina State University

Bachelor of Science, 2001, Forest Resources Management, University of Florida

PROFESSIONAL CERTIFICATION:
Geographic Information Systems Professional (GISP), #00066790, 2011, FL

hydraulic modeling software, and summarized reclaimed water policies. In Phase 2 we prepared a hydraulic model of the City's reclaimed water system, field verified the model, and evaluated system expansion alternatives. In Phase 3 we evaluated GIS-based hydraulic modeling software and helped the City select the optimum modeling software package.

Braden River Watershed Management Plan | SWFWMD | QA/QC

Jones Edmunds helped develop the Watershed Management Program for the Braden River Watershed upstream of the Bill Evers Reservoir dam for SWFWMD, Manatee County, Sarasota County, and the City of Bradenton. The watershed is approximately 59 square miles upstream and requires well over 1000 sub-basins and 1000 reaches to model the system to the desired level of detail. Some of the primary water resources concerns in the watershed include flooding problems, significant drawdowns in the surface drinking water supply reservoir beyond what has been experienced in previous years of operation, degrading reservoir water quality, and minimum flows and levels downstream of the reservoir.

SJCUD Water Conservation Initiative | St. Johns County | GIS Analyst

Jones Edmunds integrated information from the Cogsdale Customer Information System (CIS) and Sensus Automated Meter Reading/Automatic Meter Infrastructure (AMR/AMI) into the County's existing Utility GIS and Cityworks database. The linkage allowed more refined analyses of water conservation and customer demands and provided the basis for tracking historical water consumption data with the ability to report and display the information to the public. A SQL database was also created to serve as a central repository and complete the integration.

Little Manatee Watershed Management Plan | Hillsborough County | GIS Analyst

Little Manatee River watershed covers approximately 243 square miles, of which 160 square miles are within Hillsborough County. Hillsborough County hired Jones Edmunds to update the Little Manatee River Watershed Master Plan (WMP) to reflect current conditions, address SWFWMD review comments and G&S, and convert the master plan model to HC-SWMM5. The project addressed SWFWMD review comments in terms of digital data format, subbasin delineation, hydrologic and hydraulic data and parameter verification, storage verification, and model setup and stability. Model data were set up using the HC-SWMM5 modeling software and stored in the County's HC-GWIS geodatabase. Brian provided support for terrain data analyses, field reconnaissance, GIS data development and management, and development of maps and figures for evaluations and reports.

TERRI LOWERY

Sr. Vice President

Terri Lowery is the Managing Director of Sales and Marketing with Jones Edmunds and has more than 28 years of experience working with clients and technical staff on public involvement programs including developing presentation materials, establishing speakers' bureaus, organizing and conducting public meetings, and interfacing with the media. Terri is a registered lobbyist and also assists with legislative tracking and grant pursuits, organizing and conducting funding workshops, and monitoring and reporting on legislative activities. She is also experienced in organizing and coordinating public meetings, media communication and celebration events for community milestones.

SELECTED PROJECT EXPERIENCE

Southwest Regional Water Reclamation Facility Advanced Wastewater and Reuse Project | Citrus County | Client Services

The Southwest Regional Water Reclamation Facility is an existing wastewater treatment facility approximately 3 miles east of the Chassahowitzka River. Jones Edmunds completed the planning, permitting and design phase of an advanced wastewater treatment plant meeting a 5-5-3 effluent quality to replace the existing WWTF. The project is slated to be completed and operational by summer 2020. Terri served as funding and public relations specialist working with the County and agencies on grant procurement and reclaimed water use as well as working with the County to provide project information to the Sugarmill Woods community.

Water Supply Assistance | Citrus County | Client Services

Jones Edmunds prepared a letter outlining the County's plan for addressing nutrient loading in the springsheds of three outstanding Florida springs. Jones Edmunds also prepared a letter to the SWFWMD that detailed the status of the County's current Alternative Water Supply projects as required by the District's 2016 Water Supply Plan. Terri served as the liaison between the County, SWFWMD, and Jones Edmunds' technical staff.

Water Reclamation Facility Expansion | City of Newberry | Funding Specialist

Jones Edmunds provided engineering services to the City of Newberry to design and permit the expansion of the City's Water Reclamation Facility from 0.349 MGD to 0.56 MGD. Design services included a new flow splitter, a 0.21 MGD ring-steel

RESPONSIBLE FOR:
Outreach, Meeting Facilitation, Governance, Agency Coordination

AREAS OF SPECIALIZATION:
- Community/Public Relations Programs
- Legislative Coordination and Support
- Presentation Materials
- Marketing Research
- Promotional Activities
- Communication Media Development
- Funding and Legislative Workshop Coordination
- Community Event Coordination

YEARS OF EXPERIENCE: 31

YEARS WITH FIRM: 28

EDUCATION:
Bachelor of Science, 1986, Business Administration and Marketing, University of Florida

package plant, an effluent flow measurement station, a sodium hypochlorite feed and storage system, a standby diesel generator, and expansion of the effluent sprayfield. Terri assisted the City with Community Budget Issue Request for 2008 legislation session where the City was awarded a $400,000 appropriation and an SRF Loan Package for wastewater plant improvements.

East Putnam County Regional Wastewater System and Treatment Plant | Putnam County | Public Information Specialist

Jones Edmunds prepared a feasibility report for a proposed County-wide wastewater treatment facility, effluent sprayfield, and collection piping for a regional wastewater facility. When Putnam County prioritized the completion of a smaller water project, Jones Edmunds assisted the County to develop a strategy to resolve funding issues, allowing the County to retain appropriated funds while also earning interest toward the larger wastewater project. Terri served as client liaison working closely with the County Administrator as well as the funding specialist for the project which involved two different funding sources. She also negotiated user rates and contract with the Department of Corrections.

Lake Frances Water and Sewer System Upgrades and Lift Station 49 Improvements - SRF Facilities Plan | City of Tavares | Client Services

Jones Edmunds assisted the City of Tavares with applying for a SRF Loan to complete the design and construction of infrastructure improvements in the Lake Frances neighborhood. The work included completing the Request for Inclusion, the Facility Plan, and the Capital Financing Plan. Terri served as client liaison and funding specialist for this project including procurement of both Clean Water and Drinking Water SRF funding for the project.

NE SAFETEA-LU Roadway Improvements | City of Gainesville | Public Information Specialist

The City of Gainesville received federal funding through the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Several roadways improvement projects (NE 19th St, NE 19th Terrace, NE 19th Drive and NE 20th St, and culverts on NE 19th St and NE 20th St) were designed by Jones Edmunds and the projects were bid by the City. Terri assisted the City with neighborhood meetings regarding this project. Major participants included local residents who were affected by the improvements, the City of Gainesville, and in particular the Public Works Department and the funding agencies, FDOT and FHA.

AUDREY JIMENEZ, CPSM

Public Relations Specialist

Audrey Jimenez has over 16 years of experience in marketing and public relations services. She is a Certified Professional Services Marketer (CPSM) through the Society for Marketing Professional Services. Audrey currently serves on the Public Relations Committee of the Florida Engineering Society (FES). She has supported various Florida counties and cities with public relations and community educational outreach efforts.

SELECTED PROJECT EXPERIENCE

Southwest Regional Water Reclamation Facility Advanced Wastewater and Reuse Project | Citrus County | Public Relations Specialist

At the Southwest Regional Water Reclamation Facility's groundbreaking event, Audrey facilitated on-site project signage by coordinating logo approval and use through both the Florida Department of Environmental Protection (FDEP) and the Environmental Protection Agency (EPA). She also supported with event set-up and photography on the day of the event.

Stormwater Utility Public Education and Outreach | City of Lake City | Public Relations Specialist

Audrey supported with the development of public notice and agenda for a Stormwater Utility Public Workshop that provided the public with an opportunity to learn more about and ask questions regarding the City's stormwater utility. She designed graphic boards for each information station, as well as a slideshow that offered an introduction and discussed why stormwater utilities are done and community benefits.

Sewer Master Plan | Charlotte County | Public Relations Specialist

The goal of this project is to develop and prepare with public input an affordable, reliable, and efficient collection and treatment system plan that addresses the needs of existing customers while also providing for the replacement of septic systems with central sewer for the appropriate areas in the County. Audrey supported with the development of visual graphics, presentations, and other public outreach materials being used during stakeholder meetings, public workshops, and meetings with the County's Board of County Commissioners. She also supported with the graphic page layout of the Sewer Master Plan.

RESPONSIBLE FOR:
Outreach, Meeting Facilitation, Governance, Agency Coordination

AREAS OF SPECIALIZATION:
- Public Relations
- Marketing Services
- Events Planning and Coordination
- Social Media
- Website Management
- Award Applications

YEARS OF EXPERIENCE: 16

YEARS WITH FIRM: 16

EDUCATION:
Bachelor of Arts, 2001, English, University of Florida

Minor, Landscape Architecture, University of Florida

PROFESSIONAL CERTIFICATION:
Certified Professional Services Marketer (CPSM), #50438, 2011

Sweetwater Wetlands Park Ribbon Cutting Event | Gainesville Regional Utilities | Public Relations Specialist

Audrey supported with public relations planning, media outreach, and on-site event set-up/coordination with the media for the Sweetwater Wetlands Park ribbon-cutting event. She also helped with press release development and approval, coordinated with the City Mayor on an official quote regarding the project, helped promote project benefits through social media, and helped develop award applications to further promote and educate the public on the benefits of this project.

National Pollutant Discharge Elimination System (NPDES) Program Implementation Services | City of Palm Coast | Public Relations Specialist

Audrey supported the City in preparing a stormwater educational utility brochure and in generating stormwater-related content for the City's website as part of the City's NPDES Program.

CRS Audit Technical Support and Program Development | Sarasota County | Public Relations Specialist

The objective of this CRS support project is to identify, develop, implement, and document floodplain management activities that will address the County's susceptibility to flood hazards most effectively and efficiently. Audrey supported with the design of an informational flyer to help inform citizens about flooding.

Stormwater Improvements Informational Kiosk | Town of Melbourne Beach | Public Relations Specialist

Jones Edmunds designed and provided permitting and construction-phase services to the Town for stormwater and road improvements. The project is partially funded by the Indian River Lagoon National Estuary Program, FDEP, and Florida Department of Emergency Management. Audrey supported with the design an informational kiosk to help inform the public of the benefits of this project.

Coastal Fringe Roberts Bay North (Phase1) WMP | Sarasota County | Graphic Designer

Jones Edmunds developed a WMP for the Coastal Fringe Roberts Bay (North) Watershed. Audrey supported with report cover designs and production for the county.

Florida Local Environmental Resource Agencies, Inc. (FLERA) Summer and Winter Symposium Program Brochures | Public Relations Specialist

Audrey designed program brochures for both FLERA summer and winter environmental symposiums; coordinated with speakers and FLERA Board members on content development, biographies, graphics, and sponsor information; and designed the layout for the program brochures.

ERIN HUNT, PE

Managing Director of Infrastructure

Erin Hunt, PE will serve as the Water Supply Options Team Leader from Jones Edmunds for the project. Erin has over 20 years of experience specializing in water related projects including water treatment, water resources planning, the development of alternative water supply sources, and the interconnection of water supply and wastewater treatment systems. She has also worked on developing population projections for water supply and wastewater demands. Erin has worked with Water Management Districts and regional water supply agencies throughout Florida in developing water supply plans and evaluating alternative sources of supply.

SELECTED PROJECT EXPERIENCE

WUP Application | City of Bradenton | Project Manager
The City of Bradenton's 20-year Water Use Permit expires in April 2018 and the City has selected Jones Edmunds to complete the WUP application. The City is in the Southern Water Use Caution Area (SWUCA), Most Impacted Area (MIA). The source of supply is surface water from the Braden River system which is subject to a Pending Minimum Flow and Level (MFL) Restriction. The City prepares an Annual Report on reservoir operations including assessment of water resources and environmental system of the reservoir area covering the preceding Water Service Year (October 1 to September 30). This project will be closely coordinated with the City's Reclaimed Water Recharge Well Project. Erin is serving as the Project Manager.

Alafia River Project | Hillsborough County | Project Engineer
Erin participated in a feasibility study and preliminary design for the withdrawal of water from the Alafia River for use as a potable water supply. She analyzed water quality parameters and the effects of potential withdrawals on the river. Additionally, she analyzed the potential migration of the salt water wedge as a result of the withdrawals. She also assisted in the preparation of a Water Use Permitting for this project.

Surface Water Treatment Plant Siting Study | SJRWMD | Project Engineer
Erin led the siting of a 20 - 100 mgd surface water treatment plant for the SJRWMD. This study included evaluation of seven potential sites in a three county area for a treatment plant, transmission mains, surface water intake, storage, and concentrate disposal.

RESPONSIBLE FOR:
Water Supply Options Identification and Feasibility Analysis, Surface Water

AREAS OF SPECIALIZATION:
- Environmental Engineering
- Water Supply and Master Planning
- Water Treatment

YEARS OF EXPERIENCE: 20

YEARS WITH FIRM: >1

EDUCATION:
Bachelor of Science, 1996, Environmental Engineering, University of Florida

PROFESSIONAL CERTIFICATION:
Professional Engineer, #56792, 2000, FL

Peace River Manasota Regional Supply Authority WTP Rerate and Comprehensive Performance Evaluation | City of Arcadia | Sr. Project Engineer

Erin served as the Sr. Project Engineer for evaluating the rerating of the 24-MGD plant. Her responsibilities included evaluating each unit operation, chemical feed system, and solid handling processes to determine if the capacity of the facility could be increased by 2 to 4 MGD. The limiting factor for the facility was determined to be the sedimentation process. Erin also served as the Project Manager and Project Engineer for the evaluation of the performance for the Peace River/Manasota Regional Water Supply Authority's Surface Water Treatment Plant. This evaluation was conducted to determine methods for improving surface water treatment performance. As a part of this process, Erin participated in interviews of plant operations staff, reviewed the plant design and historical records and conducted a visual inspection of the plant.

Raw Water Supply Study and Master Plan | Salina, KS | Technical Advisor

Erin provided senior technical leadership to a team working with the City to identify and evaluate sustainable alternatives to meet the City's water supply needs for the next fifty years. The solution includes optimization of existing sources; new sources of supply; review of water rights and development of a conservation plan; wastewater reuse; and acquisition of additional water rights. The plan will add up to 15 mgd of additional drought resistance supply by 2060.

Water Resource Development Plan | Tampa Bay Water | Project Engineer

Erin participated in the development of the Water Resource Development Plan for Tampa Bay Water. The plan developed demand projections and established water supply alternatives to facilitate the Authority's growth through the year 2030. Erin conducted a cost analysis on over 60 water supply alternatives and ranked them based on cost and non-cost criteria. In addition, she determined the effect of demand management measures that could be applied to the Tampa Bay area. This process included calculating water savings and projecting costs of each of the recommended demand management measures.

Small Footprint Reverse Osmosis (RO) Feasibility Study | Tampa Bay Water | Project Manager

Erin led the team that conducted a developmental study for small footprint RO facilities (5mgd). This study included evaluating potential sites in the Tri-county area for RO facilities and developing preliminary costs for such facilities on the shortlisted sites. In addition, permitting issues were evaluated as a part of this study.

TOM FRIEDRICH, PE, BCEE

Senior Consultant

Tom Friedrich serves as Jones Edmunds' Senior Consultant for the Utilities Infrastructure Discipline with more than 27 years of experience in water and wastewater systems evaluation, design, and large-facility project management and construction administration. Mr. Friedrich has been the project manager for water and wastewater master planning and treatment plant design projects ranging from 0.10 to 100 MGD.

SELECTED PROJECT EXPERIENCE

BRU Reclaimed Water Interconnect | Braden River Utilities, LLC (BRU) | Client Services

Jones Edmunds provided preliminary engineering, final design, contract document preparation, bidding-phase and construction-phase services for the BRU Reclaimed Water Interconnect Project. The project consisted of reclaimed water transmission and distribution lines, pumping facilities, and a storage facility to interconnect with the City of Bradenton reclaimed water system and expand BRU's irrigation storage transmission system. Tom provided client services throughout the project providing senior engineering coordination with BRU and the City.

Surface Water Augmentation Treatment Plant Design | City of St. Cloud | Client Services

Jones Edmunds designed a 13.0-MGD—expandable to 18-MGD—Surface Water Treatment Plant. Water treated at this facility was intended to supplement the reclaimed water supply. The plant was designed to withdraw raw water from East Lake Toho through a passive screen intake into a raw water pump station. The raw water then gets pumped into two disk-type filters to remove Total Suspended Solids (TSS), and then conveyed by gravity to a Chlorine Contact Basin (CCB). The CCB and the chemical feed system were also upgraded. Flow from the CCB gets pumped into the system and into a 0.5-MGD ground storage tank. High-service pumps then feed the unrestricted public access reuse system.

20-MGD Reclaimed Water Pump Station | City of St. Cloud | Project Manager

Jones Edmunds provided construction-phase services for a reclaimed water pump station upgrade. The pump station is designed for initial and ultimate firm capacity of 20 and 30 MGD, respectively. Design and construction services were fast tracked as a separate project from the Southside WWTF expansion to obtain $800,000 of grant funding from SFWMD.

RESPONSIBLE FOR:

Water Supply Options Identification and Feasibility Analysis - Surface Water and Reclaimed Water

AREAS OF SPECIALIZATION:

- Master and Facilities Planning
- Water and Wastewater Treatment Process Design
- Biological Nutrient Removal (BNR) and Advanced Treatment
- Water Quality, Water Chemistry and Microbiology
- Industrial Wastewater/Landfill Leachate Treatment Design
- Biosolids Treatment, Disposal and Management
- Regulatory Permitting and Compliance
- Construction Administration of Treatment Facilities

YEARS OF EXPERIENCE: 27

YEARS WITH FIRM: 15

EDUCATION:

Master of Science, 1992, Environmental Resource and Engineering, SUNY College of Environmental Science and Forestry

Bachelor of Science, 1988, Environmental and Forest Biology, SUNY College of Environmental Science and Forestry

ASR-2 System Final Design | City of Bradenton | Client Services and QA/QC

Jones Edmunds provided preliminary and final design services for a 2 MGD Aquifer Storage and Recovery (ASR) well system at the Evers Reservoir Water Treatment Plant (WTP). Treated water will be store in the ASR during the wet season and subsequently extracted to help meet potable water needs during the dry season. Project components include a vacuum degassification system used to remove dissolved oxygen from the treated water to avoid unacceptable arsenic mobilization within the aquifer, a transfer pump station, an ASR recharge pump station, a ASR well pump, water quality analyzers and control valves to direct the discharge of recovered water to either the disinfection clearwell, filters, or the head to the WTP based on the quality of the recovered water. Tom provided Client Services and QAQC for the design.

ASR-2 System Surface Facilities Construction Phase | City of Bradenton | Client Services and QA/QC

Jones Edmunds is providing final design, equipment procurement, bidding, and construction services for the construction of a new Aquifer Storage and Recovery system for the City of Bradenton. The project is a “First of Its Kind” installation, in that existing degasification technology will be used to remove dissolved oxygen from the water to prevent arsenic mobilization. Jones Edmunds final design will be divided into a procurement and construction solicitations for the procurement of the degasification tower and the construction of the degasification surface facilities respectively. Tom is providing Client Services and oversaw the procurement package preparation.

Southwest Regional Water Reclamation Facility Advanced Wastewater and Reuse Project | Citrus County | QA/QC

The Southwest Regional Water Reclamation Facility is an existing wastewater treatment facility approximately 3 miles east of the Chassahowitzka River. Jones Edmunds completed the planning, permitting and design phase of an advanced wastewater treatment plant meeting a 5-5-3 effluent quality to replace the existing WWTF. The project is slated to be completed and operational by summer 2020.

TOM FRIEDRICH, PE, BCEE CONTINUED

PROFESSIONAL CERTIFICATION:

Professional Engineer, #61281, 2004, FL

Board Certified Environmental Engineer (BCEE), #01-10041, 2005

DAVID YONGE, PhD

Engineer Intern

Dr. David Yonge is an Engineer Intern for the Utilities Division at Jones Edmunds, specializing in drinking water treatment. He has a doctorate in environmental engineering from the University of Central Florida. His area of expertise includes membrane treatment, ion exchange, aeration, disinfection, disinfection by-products, and conventional treatment processes. His technical skills include laboratory procedures for water quality analysis, process operation troubleshooting, membrane and conventional filtration pilot testing, data analysis, and water treatment bench-scale evaluations.

SELECTED PROJECT EXPERIENCE

ASR-2 System Surface Facilities Construction Phase | City of Bradenton | Engineer Intern

Jones Edmunds is providing final design, equipment procurement, bidding, and construction services for the construction of a new Aquifer Storage and Recovery system for the City of Bradenton. The project is a “First of Its Kind” installation, in that existing degasification technology will be used to remove dissolved oxygen from the water to prevent arsenic mobilization. Jones Edmunds final design will be divided into a procurement and construction solicitations for the procurement of the degasification tower and the construction of the degasification surface facilities respectively.

Regional Entity Implementation Agreement | City of Lakeland | Engineer Intern

To address water supply needs within Polk County, county and city utilities are considering using the interconnects between their respective distribution systems to convey water throughout the service areas and meet the region’s water demand. Jones Edmunds conducted a preliminary distribution system compatibility analysis considering disinfection methods, hydraulic conditions, and water quality compatibility for each of the participating water utilities. David provided technical memorandum writing.

NE WRF Blend Tank Improvements | City of Clearwater | Engineer Intern

This project will modify and upgrade biosolids infrastructure on existing tanks, pump stations and piping at the Northeast WRF to allow waste sludge to be blended with primary sludge, stored and pumped at a low rate over a 24-hour period to the Northeast WRF’s – primary anaerobic digester. This project will equalize the East Plant WRF waste activated sludge (WAS) that is off-loaded

RESPONSIBLE FOR:

Water Supply Options Identification and Feasibility Analysis - Surface Water

AREAS OF SPECIALIZATION:

- Water Treatment
- Water Quality Analysis
- Membrane Treatment Process
- Sulfide Treatment
- Conventional Filtration
- Disinfection
- Injection Well/UIC Permitting
- ASR

YEARS OF EXPERIENCE: 1

YEARS WITH FIRM: 1

EDUCATION:

Doctor of Philosophy, Environmental Engineering, University of Central Florida

Master of Science, 2012, Environmental Engineering, University of Central Florida

Bachelor of Science, 2011, Environmental Engineering, University of Central Florida

Bachelor of Science, 2011, Civil Engineering, University of Central Florida

by truck at the NE WRF daily. The improvements will improve biogas production and reduce foaming problems in the anaerobic digester. The specific improvements include: refurbish/upgrade the two 40-foot-diameter Sludge Storage and Blending Tanks to allow off-loading and storage of East Plant WRF - WAS prior to pumping to the anaerobic digester; upgrade the truck off-loading pump station which off-loads tankers from the East Plant WRF; install new sludge transfer pumps to pump WAS from the Sludge Storage and Blending Tank to the anaerobic digester to allow continuous low-rate feeding over a 24-hour period to optimize anaerobic digester performance; and upgrade electrical, instrumentation, and control for the above-mentioned unit treatment processes and modify SCADA.

Duke Energy Hot-Oil Pipeline Conversion Feasibility Study | Pinellas County | Task Manager

Jones Edmunds performed a feasibility study to determine if a hot-oil pipeline could be repurposed to convey reclaimed water or waste activated sludge (WAS) between Pinellas County's South Cross Bayou (SCB) and William E. Dunn (WED) WRFs. Using the pipeline to convey RCW from SCB to WED would allow the County to reduce nutrient loading to Joe's Creek, meet current customer demands, and expand RCW service. If the pipeline was used to convey WAS from the WED WRF to SCB WRF, the County would reduce costs at the WED WRF, and the pipeline could potentially allow the County to convert its biosolids handling facility into a centralized regional facility with the ability to receive sludge from additional local municipalities. David worked on the WAS conversion option and provided figure development, hydraulic analysis, cost analysis, present-worth analysis, RCW reservoir modeling, and technical memorandum writing.

Turner Road WPF Regionalizations | Polk County | Engineer Intern

Polk County is considering converting the Turner Road Water Production Facility (WPF) to a pump station to improve distribution system water quality and reduce costs. The water allocation currently produced at the Turner Road WPF would be transferred to another County WPF. Jones Edmunds performed groundwater modeling to determine the water quantity for reallocation and performed hydraulic and water quality modeling of the distribution system to predict how the changes would affect the existing system. David provided technical memorandum writing.

DAVID YONGE, PhD CONTINUED

PROFESSIONAL CERTIFICATION:

Engineer Intern, #1100015690, 2011, FL

LISA RHEA, PE

Infrastructure Department Manager

Lisa Rhea is the Tampa Utilities Department Manager for Jones Edmunds. She has over 15 years of experience designing and managing public utilities. Lisa has worked on wastewater collection systems and treatment plant projects for Florida municipalities, including the Cities of St. Cloud, Dunnellon, Oldsmar, and Polk City. Additionally, she has participated in landfill leachate research funded by the Florida Center for Solid and Hazardous Waste, presented her research at the Florida SWANA conference in summer 2005, and published various papers on leachate.

SELECTED PROJECT EXPERIENCE

Water Reclamation Facility Master Plan | City of Oldsmar | Project Manager and Client Services

Jones Edmunds worked with the City on this SWFWMD cooperatively funded project to develop a Reclaimed Water (RCW) Master Plan that developed a hydraulic model for the RCW distribution system, identifying new potential customers, determining expansion pipe routing, and preparing preliminary cost estimates for expansion options. Lisa was responsible for coordinating the project to make sure it met the City's expectations and was completed in accordance with the project schedule.

Water Reclamation Facility Aeration Assessment | City of Oldsmar | Project Manager and Client Services

Jones Edmunds assessed the WRF aeration system, evaluated alternative aeration system configurations, identified and summarized upgrades to the system that increase efficiency, improved plant operations for nutrient and COD removal, and provided cost estimates for the selected options.

Surface Water Augmentation Treatment Plant Design | City of St. Cloud | Project Engineer

Jones Edmunds designed a 13.0-MGD—expandable to 18-MGD—Surface Water Treatment Plant. Water treated at this facility was intended to supplement the reclaimed water supply. The plant was designed to withdraw raw water from East Lake Toho through a passive screen intake into a raw water pump station. The raw water then gets pumped into two disk-type filters to remove Total Suspended Solids (TSS), and then conveyed by gravity to a Chlorine Contact Basin (CCB). The CCB and the chemical feed system were also upgraded. Flow from the CCB gets pumped into the system and into a 0.5-MGD ground storage tank. High-service pumps then feed the unrestricted public access reuse system.

RESPONSIBLE FOR:
Water Supply Options Identification and Feasibility Analysis - Reclaimed Water

AREAS OF SPECIALIZATION:
- Wastewater Treatment
- Distribution and Collection Systems
- Municipal Operations
- Leachate Treatment and Characterization
- Environmental Engineering

YEARS OF EXPERIENCE: 17

YEARS WITH FIRM: 12

EDUCATION:
Master of Science, 2004, Environmental Engineering, University of South Florida

Bachelor of Science, 1997, Chemistry Education, University of South Florida

PROFESSIONAL CERTIFICATION:
Professional Engineer, #69210, 2009, FL

ASR Well Construction and Design of Surface Facilities | City of St. Cloud | Project Manager

Jones Edmunds completed a May 2014 Study of Effluent Disposal Alternatives. A Class V Recharge Well for reclaimed water was the cost-effective alternative for eliminating surface water discharges during wet weather. The project work included construction administration and resident observation services for the ASR well and associated wells; designing the surface facilities for the recharge well system; design of Class V wellhead to allow gravity siphon flow, a well house, and flow metering and well water level monitoring equipment; bidding, construction administration, and resident observation services for the ASR surface facilities; preparation of an application for water quality criteria exemption and an FDEP application to modify the existing SSWWTF operating permit for the Class V well; and assistance to the City with initial startup and operation. As Project Manager, Lisa oversaw surface facility design, is coordinating the administration and resident observation services, is preparing a water quality criteria exemption application and an FDEP application to modify the existing SSWWTF operating permit.

Duke Energy Hot-Oil Pipeline Conversion Feasibility Study | Pinellas County | QA/QC

Jones Edmunds performed a feasibility study to determine if a hot-oil pipeline could be repurposed to convey reclaimed water or waste activated sludge (WAS) between Pinellas County's South Cross Bayou (SCB) and William E. Dunn (WED) WRFs. Using the pipeline to convey RCW from SCB to WED would allow the County to reduce nutrient loading to Joe's Creek, meet current customer demands, and expand RCW service. If the pipeline was used to convey WAS from the WED WRF to SCB WRF, the County would reduce costs at the WED WRF, and the pipeline could potentially allow the County to convert its biosolids handling facility into a centralized regional facility with the ability to receive sludge from additional local municipalities. Lisa provided technical memorandum writing and QA/QC.

Wastewater Facility Plan and Design Improvements | City of Bradenton | Project Manager

Jones Edmunds updated the City's 2005 Wastewater Facility Plan in 2016 to reflect changes in growth projections, completed projects, and needed improvements at the wastewater treatment facility and sewer collection and transmission system. The updated planning document was used for City's submission to FDEP SRF for project planning and construction loan funding and approved in fall 2016. Jones Edmunds also assisted the City of Bradenton with WWTF upgrades and improvement projects that have been designed, bid, and are currently under construction.

ABOUT CARDNO

Cardno is an ASX-200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage, and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD]. For additional information, visit www.cardno.com.

Cardno ZERO HARM EVERY JOB. EVERY DAY.

At Cardno, our primary concern is to develop and maintain safe and healthy conditions for anyone involved at our project worksites. We require full compliance with our Health and Safety Policy Manual and established work procedures and expect the same protocol from our subcontractors. We are committed to achieving our Zero Harm goal by continually improving our safety systems, education, and vigilance at the workplace and in the field. Safety is a Cardno core value and through strong leadership and active employee participation, we seek to implement and reinforce these leading actions on every job, every day.

www.cardno.com

Cardno

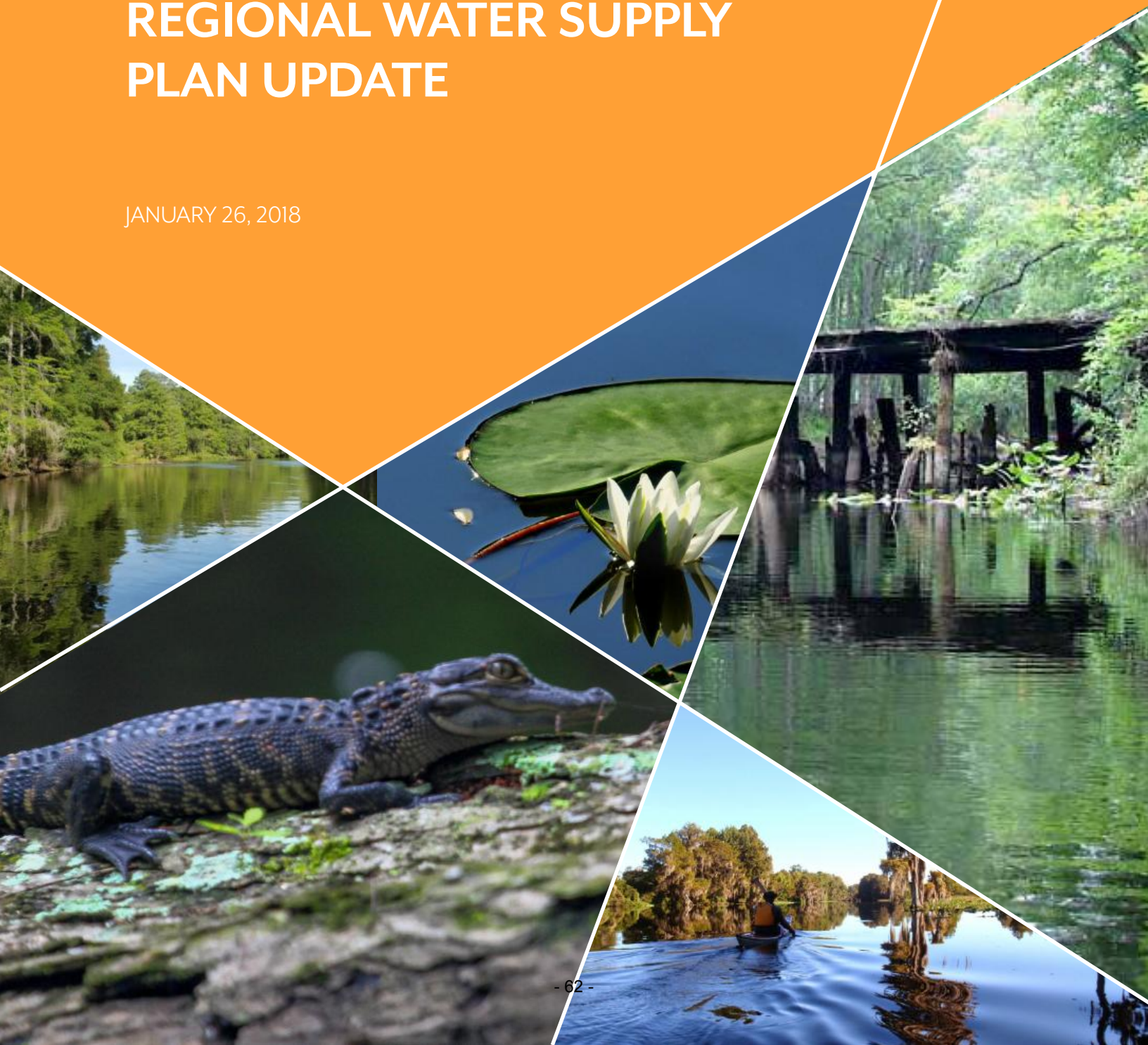
QUALIFICATIONS STATEMENT FOR:

REISS ENGINEERING

Withlacoochee Regional Water Supply Authority

REGIONAL WATER SUPPLY PLAN UPDATE

JANUARY 26, 2018



REISS ENGINEERING
PLANNING · DESIGN · CONSTRUCTION

January 26, 2018

Richard S. Owen, Executive Director
Withlacoochee Regional Water Supply Authority
3600 W. Sovereign Path, Suite 228
Lecanto, Florida 34461

RE: SOQ for Regional Water Supply Plan Update

Dear Mr. Owen and Selection Committee Members:

On September 26, 2017, the Southwest Florida Water Management District (SWFWMD) approved funding to update the Withlacoochee Regional Water Supply Authority's (Authority) Regional Water Supply Plan. This out-of-cycle funding request and approval was necessary so that the Authority can complete its important water supply planning effort in time for the SWFWMD to use the information in its 2020 Regional Water Supply Plan. Your Regional Water Supply Plan Update will assess future public supply water demands through 2040, identify meaningful conservation and reuse programs and strategies, identify potential sources of future water supply including fresh groundwater and alternative water supplies, and determine the necessary water supply infrastructure and timing of future water supply projects to meet the growing needs of the region. The water demands in the region are projected to increase by almost 97 mgd by 2035, with 41 mgd of that increase associated with public water supply. With this planning effort, the Authority must cost efficiently plan, improve, and expand its water infrastructure, promote public supply water conservation, promote beneficial use of reclaimed water, and implement strategies for Minimum Flows and Levels (MFLs) compliance. The Reiss Engineering, Inc. (Reiss) team has extensive experience and qualifications with water supply planning and will provide an expert and fresh perspective to the Authority and its Member Governments with the following benefits:

Water Supply Planning Expertise

UTILITIES ACROSS FLORIDA CONTINUE TO TURN TO REISS FOR OUR WATER SUPPLY PLANNING EXPERTISE AND PROVEN PERFORMANCE.

Over the past three years, Reiss has successfully completed two critical regional water supply planning efforts as part of the Central Florida Water Initiative that were co-funded by the SWFWMD. The Cypress Lake brackish water supply project is an award winning project for the Water Cooperative of Central Florida where Reiss was the lead consultant for the modeling and infrastructure planning for Orange, Osceola, and Polk Counties, the City of St. Cloud and the Reedy Creek Improvement District. Reiss was the lead consultant for the development of alternative water supplies for the Polk Regional Water Cooperative that identified multiple alternative water supplies to meet future projected water supply deficits. The recommended water supply projects are now under further development and testing as part of the SWFWMD's Central Florida Water Initiative. As such, the Authority can expect the knowledge of regional water supply planning and working collaboratively with all stakeholders will be applied to your Regional Water Supply Plan Update.

Right Sized, Efficient Team With A Fresh Perspective

Reiss is a civil and environmental engineering firm that specializes in all elements of water, wastewater and reuse. Our firm is a leader across Florida with both water supply and master planning and stands ready to assist you in successfully planning your future water supplies, conservation programs, and water supply infrastructure. We understand the Authority needs a Regional Water Supply Plan that cost-effectively meets the needs of its members in a meaningful and useful way. Accordingly, Reiss has developed a streamlined

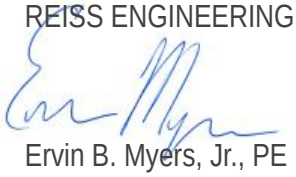
team without multiple subconsultants and will focus on the issues that can provide the greatest value to the Authority's members, such as additional conservation programs and strategies, expanded use of reclaimed water, maximizing the use of existing supplies and infrastructure, and identifying the most technically and economically feasible alternative water supplies should traditional groundwater supplies become limited over the planning period. Hydro-Environmental Associates, Inc. (HEA) led by Mr. Ken Jones, is part of the Reiss team because of their knowledge of the Northern District Model for groundwater modeling and experience assessing the availability of groundwater and alternative water supplies. This team will build upon past work performed by the Authority, its members and the SWFWMD and will provide a fresh perspective on the issues while focusing on the elements of the Regional Water Supply Plan Update that will return the most value to the Authority and its members.

Leadership, Expertise, and Responsiveness You Can Trust

Specifically, the Authority will benefit from the vast expertise this team will provide under the leadership of our proposed project officer, Ervin Myers, who will serve as the Authority's primary point of contact. Mr. Myers has 20 years of related municipal utilities engineering experience and has worked on numerous regional water supply and planning projects. In addition to planning experience, Mr. Myers also has significant experience in the planning of regional water supply and the design and construction of the related infrastructure, providing the Authority with a unique perspective and understanding of the issues associated with implementing regional water supplies. He has facilitated efforts on many governance related issues among regional water supply authorities and their members making him an ideal project officer to facilitate discussions with the Authority and its members. Supporting Mr. Myers will be a slate of subdiscipline leaders, technical support staff, and subconsultants that are experts in their respective disciplines. Our team members have worked together extensively throughout Florida and will deliver cost-effective, high-quality service to the Authority. The projects referenced above as well as many others included in this SOQ were led by Mr. Ed Talton who will serve as our task leader for conservation and reuse strategies and regional water supply options. Mr. Talton's 27 years of experience with planning includes numerous projects with extensive conservation and reuse elements as well as the assessment of critical infrastructure for regional water supplies.

Our entire team has the experience and qualifications to partner with the Authority in updating its Regional Water Supply Plan. At Reiss, we are extremely excited about this opportunity and look forward to the opportunity to work with you. If you have any questions, please do not hesitate to contact me at any time.

Sincerely,
REISS ENGINEERING, INC.



Ervin B. Myers, Jr., PE
Project Officer

REISS FIRM PROFILE

1. Legal name, address, phone number and email:

   Reiss Engineering, Inc.
   3030 North Rocky Point Drive
   Suite 161
   Tampa, FL 33607
   p. (813) 549-0919

   Primary Contact:

   Mr. Ervin Myers, Jr., PE
   ebmyers@reisseng.com

2. Principal Locations:

   3030 North Rocky Point Drive
   Suite 161
   Tampa, FL 33607
   p. (813) 549-0919

   1016 Spring Villas Point
   Winter Springs, FL 32708
   p. (407) 679-5358

3. Legal Form of Company:

   Corporation (Florida)

THE REISS TEAM PROVIDES:

- A FRESH PERSPECTIVE FROM A RECOGNIZED TEAM OF EXPERTS
- REGIONAL WATER SUPPLY PLANNING EXPERTISE
- A HOLISTIC AND COMPREHENSIVE ASSESSMENT
- FEASIBLE, COST EFFECTIVE SOLUTIONS

4. Identification and outline of qualifications and professional experience of project officer

Project Officer Qualifications

Mr. Ervin Myers, Jr., PE will serve the Authority on this contract as the Reiss team's project officer and primary point of contact. Mr. Myers will be accountable for production, schedule, budget, quality and delivery, and will collaboratively work with the Authority for the duration of the project. Mr. Myers offers more than 20 years of experience with alternative water supply studies, hydraulic modeling, water quality modeling, water supply planning and infrastructure improvements, planning, design, and construction of water and wastewater treatment plants, pump stations, earthen embankment repair and analysis, water quality issues, and program management services. His experience includes extensive project management success in all phases of planning, design, permitting, construction and start up of facilities.

Mr. Myers served as the project manager for the Phase I Water Supply Plan for Polk County and was responsible for the development of the report that summarized the potable water needs for the 17 municipalities, forecasts of beneficial reuse, opportunities for conservation, and potential water supply projects of interest. He was also the technical project manager for the original Water Supply Plan for the Heartland Water Alliance of DeSoto, Hardee, Highlands, and Polk Counties to develop demand and supply projections for all water use categories and prepare a water supply plan for each County. **Detailed qualifications for Mr. Myers are outlined in his resume included in the** Appendix.

Firm Qualifications

Reiss' expertise encompasses a wide range of services including design and construction of water treatment, wastewater, and reuse water facilities, as well as planning and permitting services. With a historical focus on potable water supply and water quality studies, and an impressive resume of complex design projects, Reiss is capable of providing specialized services and a proficiency that differentiates it from other firms.

Reiss brings a vast history of experience as it relates to potable water supply planning and design. Reiss presents a matrix of supplemental water supply alternatives, and a comprehensive, concise master plan for the adequate and sustainable provision of water supply over the course of the planning period to the client at the completion of each water study. Reiss successfully implemented a county-wide water supply plan for Polk County in which the

process of exploring supplemental water supplies was extremely challenging for the 17 Polk County municipalities and six individual county service areas.

Years in Business

Reiss was founded in 1998, and has established itself as a state leader in civil and environmental consulting engineering. Reiss provides a full range of services from master planning of capital improvement programs to general civil engineering assignments such as lift station/pump station/ pipeline design to detailed water and wastewater treatment plant planning, design and construction. Our approach to managing assignments and delivering this project on schedule and budget is consistent with our corporate philosophy of providing responsive, personalized, high quality engineering services. Reiss takes great pride in our historical emphasis on state-of-the-art expertise and responsive customer service. Key to the foundation of its success is the Reiss team of professionals, currently more than 40 full time staff members, who are industry leaders in their respective areas of expertise. Additionally, Reiss has the technical depth and capability of a large national engineering firm, while retaining the “small company” virtues of attentive customer service and responsiveness. With an impressive history of project successes, Reiss has been widely embraced by clients in need of the expertise, customer service, and attention to detail offered by the firm’s staff.

In all aspects of planning, design and construction management, Reiss provides sound technical guidance and products that serve our clients, and accomplish the mission of utility providers across the globe. With a team of knowledgeable and competent technical experts in their fields, and a strong history of serving numerous communities over the past 20 years, Reiss can help accomplish the important tasks required to meet the challenges of this regional water supply plan update project.

Preferred Consultant for Municipalities

In addition to our reputation as a leading water, design, permitting, and construction management firm, Reiss is a preferred consultant for many municipalities. In fact, we are currently under contract with more than 40 public utilities in Florida.

We encourage the Authority to contact the references listed in our Client References section to learn more about how we deliver highly technical water services to our valued clients.

Highly Skilled, Local, and Familiar Staff

Reiss is proposing a well-qualified and experienced team highly skilled in providing full-service planning, design, and construction management services for water supply, water treatment, water resource, and transmission system projects. Our team includes staff not only experienced in the Authority's stated scope of services, but also in managing similar projects in the State of Florida. It is this expertise, combined with our senior level leadership, that will allow us to partner with the Authority and work hand-in-hand with you as you implement this critical project.

Award-Winning Planning, Design, and Construction

Reiss takes great pride in our historical emphasis on state-of-the-art expertise and responsive customer service. These values are present in everything we do and have led to our recognition for the following outstanding achievements:

- 2016 and 2015 PSMJ Honorable Mention Premier Award for Client Satisfaction
- 2015 Florida American Public Works Association (APWA) Project of the Year Award for City of Clearwater RO WTP No. 2
- 2015 ENR Southeast #70 Top Design Firms
- 2013 Central Florida Engineers Week Cypress Lake Project of the Year
- 2012 Central Florida Engineers Week Outstanding Small Organization of the Year – Private Sector (less than or equal to 100 employees)
- 2004 Outstanding American Membrane Technology Associations (AMTA) member for involvement and contributions to AMTA.

5. Qualifications of other key personnel

Mr. Myers will be supported by an exceptional team of qualified key personnel with extensive local and regional experience.

Mr. Meifa Chen, PhD, PE, a well-recognized master planning and hydraulic modeling expert, has more than 25 years of strong technical experience in water, wastewater, and stormwater hydraulic modeling, wet utility master planning, hydraulic design, and project management. Dr. Chen will lead the effort for the population and water demand projections for this project. He will provide hands-on practical experience in water and wastewater systems; hydraulic modeling of water and wastewater system master planning; development, costing and phasing of capital improvement projects; watershed planning and study; constructed wetland planning and design; urban and river flooding study; population, water demand, wastewater flow projections at various spatial levels such as city, district, traffic analysis zone (TAZ), sewershed, water pressure zone, water distribution zone and parcel, etc.; river level gaging and sewer flow monitoring; pump sizing and pump station hydraulic design; water storage tank/reservoir hydraulic design and modeling; water and wastewater customer complaint database analysis; GIS mapping, and database development.

Mr. Edward Talton, Jr., PE will lead the conservation and reuse strategies efforts for this project. He is a leading expert in the field of planning and hydraulic modeling. He is the project manager and key hydraulic modeling consultant for the award winning Cypress Lake Potable Water Transmission, Optimization, and Interconnection Analysis and Conceptual Design to withdraw groundwater from the Lower Floridan aquifer as an alternative water supply. He has also been involved with water, wastewater and reuse project development and design, advanced water treatment (membranes), facilities planning, hydraulic modeling, pipeline/pump station design, leachate management and permitting for the past 27 years. His experience includes ground and surface water supply development and treatability, reverse osmosis (RO) facility design, water, wastewater and reuse master planning, implementation support work including CIP and mapping updates, WTP site acquisition, operational optimizations, hydraulic model maintenance and development review.

Mr. Glenn Dunkelberger, PE, BCEE will serve as the lead for the groundwater and surface water treatment on our team. His experience in membrane treatment, pilot testing, design, and construction, makes him a perfect choice for this important assignment. With more than 45 years of experience designing plants using ion exchange, GAC, membranes, ozone, lime softening, and conventional and advanced treatment technologies, Mr. Dunkelberger has a depth of knowledge that is unmatched among water treatment engineers. He will also serve as a significant source of information for our team due to his breadth of knowledge related to planning, pilot studies, process operations, and detailed design specifically related to advanced water treatment facilities. Mr. Dunkelberger's vast amount of knowledge and advanced skill set perfectly align with those needed to deliver a successful project for the region, and we are confident he will provide valuable support to our team.

Dr. C. Robert Reiss, PhD, PE will serve as the lead for brackish water and seawater desalination. With more than 25 years of experience focused on membrane facility planning, permitting, design, and operation, Dr. Reiss is a nationally recognized expert on water quality, water treatment processes and advanced treatment issues, with an emphasis on membrane technologies. Dr. Reiss will provide leadership to this highly qualified team of experts. Having completed his doctorate in engineering focusing on the

testing, design, and operations of RO water treatment systems, he has built his career on membrane desalination projects and founded a firm renowned for its expertise in membrane systems. Dr. Reiss can provide the Authority with important communications guidance for member governments, staff, and your customers.

Mr. Allen Dethloff, PE

will lead the effort to help determine the regional water supply options. As a water/wastewater engineer in the Tampa Bay area for the past 16 years, Mr. Dethloff has intimate knowledge of the area's resources, conditions, and the utility stakeholders that contribute to the water supply in the Authority's region. He completed a water master plan for Tampa Bay Water's six member governments which included supply and demand projections for the region. His experience includes preliminary and final design, master planning, hydraulic modeling, construction oversight, permitting, cost analysis, feasibility studies, and capital project management for a variety of municipal and government projects including, potable water systems.

Mr. Weston Haggen, PE

will serve as the lead for feasibility and cost estimates. Mr. Haggen is experienced in water, wastewater, and reclaimed water. Projects include water quality hydraulic modeling, master planning, pipeline design, lift station design, potable water quality improvement, unidirectional flushing, inflow and infiltration (I/I) studies, construction administration, preliminary design of wastewater and water plants, regulatory permitting, water treatment pilot studies, feasibility studies, report writing, and data management, including geographic information systems (GIS) for a variety of municipal and government projects in water and wastewater treatment.

Subconsultant

To enhance our services, we have included niche industry expert, Hydro-Environmental Associates, Inc. (HEA) on our project team to lead the effort for groundwater/surface water resources. HEA is an environmental and hydrogeologic consulting firm backed by more than 50 years of experience in environmental, geologic, hydrologic, and water resource issues in Florida. HEA was formed in 1994 by senior environmental professionals to provide a high standard of performance in the fields of hydrogeology and environmental consulting services while maintaining a personalized client-consultant relationship. HEA, is dedicated to meeting the challenge of providing responsible, efficient and cost-effective solutions to client's hydrogeological, water resource, and environmental needs. HEA key personnel include:

Mr. Kenneth Jones, PG (HEA)

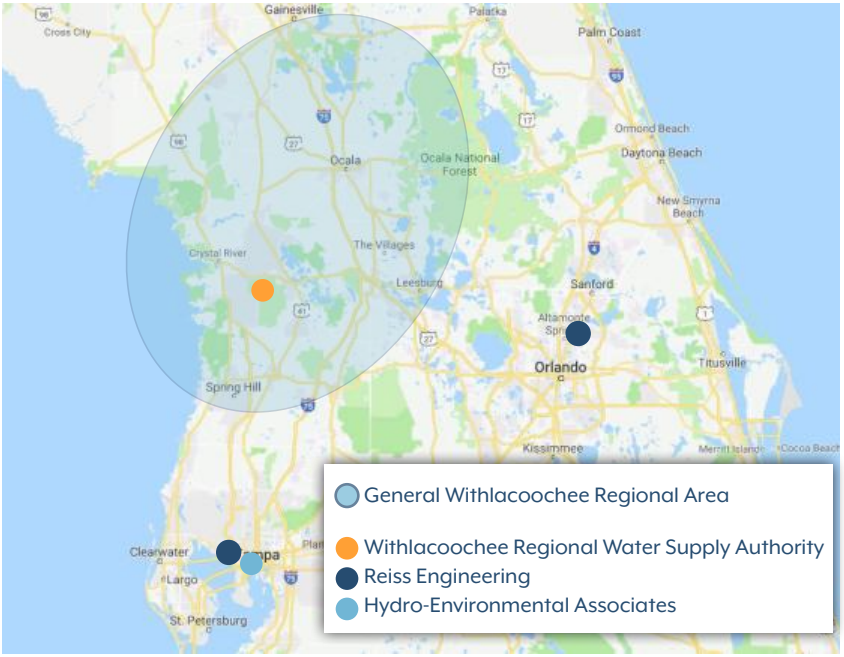
has more than 40 years of experience in hydrogeologic consulting and is conversant in all aspects of Florida geology and groundwater analysis. He offers extensive experience in groundwater flow modeling to determine drawdown impacts, contaminant migration, efficiency of pumping systems, aquifer recharge, and data analysis and interpretation. Mr. Jones is responsible for hydrogeologic investigations, supervision of exploratory drilling, wellsite stratigraphic analysis and well design, and water supply investigations. Furthermore, his duties have involved long-term evaluation of wellfield impacts on wetlands; water supply planning and water use permitting; well site feasibility studies; well design; drilling contracting; and well construction supervision and oversight.

Mr. Robert Moresi, PG (HEA)

has 47 years of experience in the assessment and management of natural resources. His

experience includes ten years with three water management districts, and 37 years as a consultant. During that time, his experience has ranged from directing regulatory programs to acting as senior hydrogeologist assessing water resources availability. His responsible project experience has included multiple county studies; design and implementation of hydrogeologic and well construction projects; assessing alternative water availability; developing municipal master plans; conducting wellfield studies for expansion and protection; implementation of regional regulatory programs; managed multi-discipline studies to meet future water supply demand; and prepared wellfield protection plans.

An organizational chart delineating our project team and their assigned roles is included on the next page. Detailed resumes, including office locations for our key team members are located in the Appendix.



As a water-focused Central Florida engineering firm, Reiss will provide the Authority with the regional knowledge, local relationships, and ability to be there when you need us.

Location

For any time-sensitive project, the location where work products are developed plays a key role in the successful completion of the project and the level of services provided. In many instances, large national firms depend on regional or national technical staff to provide their engineering services. This usually means that engineers from other states or regions are involved, some of which may not understand Florida-specific challenges or client-specific goals and objectives. Frequently, the difficulties of communication between regional offices cause delays or products that are not site specific.

The Reiss team provides the Authority with a unique opportunity to avoid these issues. All of the work performed by members of the Reiss team will be provided by technical staff located in Florida, with office locations in nearby Tampa and Winter Springs. In order to provide the best services possible, Reiss' Tampa office, just an hour south of the Authority's offices, will be responsible for the services to be provided for this project. Our local subconsultant, HEA, is also located in Tampa. Individual team member locations are identified on their resumes included in the Appendix.

Team Organizational Chart

Our team has been built to provide the Authority with a cost-effective and technically-sound regional water supply plan that meets your goals and objectives as well as the needs of each individual member. In order to provide the Authority with unmatched commitment and technical leadership, the Reiss team will be led by project officer, Ervin Myers, Jr., PE, who will serve as your direct contact. In addition to strong management, the Reiss team provides highly experienced team members that will deliver the required services defined in the SOQ. With a team composed of Florida experts, the organizational chart below represents a lineup of established leaders with unmatched technical capabilities, local experience, and knowledge.

PROJECT OFFICER
Ervin Myers, Jr., PE

QA/QC
J. Richard Voorhees, PE, BCEE

KEY PROJECT TEAM MEMBERS

POPULATION AND WATER DEMAND PROJECTIONS
Meifa Chen, PhD, PE

CONSERVATION AND REUSE STRATEGIES
Edward Talton, Jr., PE

GROUNDWATER/SURFACE WATER RESOURCE AVAILABILITY
Ken Jones, PG
Bob Moresi, PG

TECHNICAL REVIEW COMMITTEE AND AGENCY COORDINATION AND GOVERNANCE
Ervin Myers, Jr., PE

BRACKISH WATER AND SEAWATER DESALINATION
C. Robert Reiss, PhD, PE

GROUNDWATER/SURFACE WATER TREATMENT
Glenn Dunkelberger, PE, BCEE

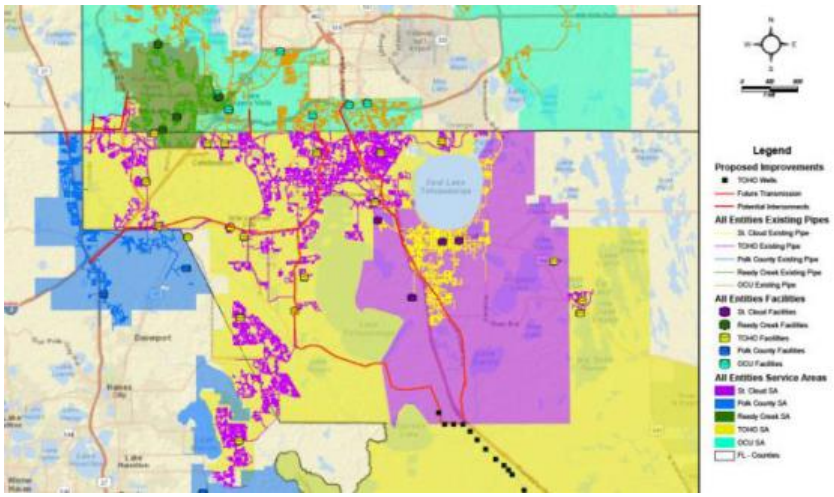
REGIONAL WATER SUPPLY OPTIONS
Allen Dethloff, PE
Edward Talton, Jr., PE

PROJECT FEASIBILITY AND COST ESTIMATES
Weston Haggen, PE
Allen Dethloff, PE

6. Project examples relating to the project service areas

CYPRESS LAKE POTABLE WATER TRANSMISSION, OPTIMIZATION, AND INTERCONNECTION ANALYSIS & CONCEPTUAL DESIGN

CENTRAL FLORIDA REGION



Owner

The Water Cooperative of Central Florida & Reedy Creek Improvement District

Completed

2014

Relevancy to the Authority

- Regional water supply planning
- Alternative water supply
- Conceptual design
- Hydraulic modeling

Description

The Water Cooperative of Central Florida members (consisting of Toho Water Authority, the City of St. Cloud, Orange County, and Polk County), together with the Reedy Creek Improvement District (RCID), were issued a 30-year 37.5-mgd water use permit by the South Florida Water Management District to withdraw groundwater from the lower Floridan aquifer as an alternative water supply and to optimize the use of this source with existing groundwater sources in order to maximize cost-effective delivery of potable water to meet existing and future demands of each participating utility.

The Cypress Lake project is anticipated to deliver 30-mgd of finished (potable) water. The primary goal of this conceptual design was to develop a cost-effective and reliable strategy to "wheel" existing water supplies between the utilities and transmit and integrate Cypress Lake supply water into the potable water distribution systems. Reiss collaborated with the client to fully understand its specific goals and objectives while communicating procedures and schedules to meet these goals with specific milestones.

The major innovative application developed for the Cypress Lake Transmission project was an expansive combined hydraulic model that included all five utility systems with existing and future interconnects. This regional hydraulic model included over 100,000 pipes and nodes. Individual master models were verified against each utilities' GIS, updated as necessary from record documents to include existing interconnections and hydraulic operation was verified with existing SCADA data. Individual models were left in their native coordinate system, and the proposed interconnect piping was adjusted for coordinate offsets. Models' numbering systems were modified to resolve potential duplication issues. The model combination process was integrated for easier and less costly updates. The located future demands were synchronized to allow for accurate assessment of future infrastructure needs and phasing alternatives. The resulting regional hydraulic model was utilized to produce accurate, coordinated, and comprehensive hydraulic simulations of the combined systems in a detailed conceptual design report.

POLK COUNTY INTEGRATED REGIONAL WATER SUPPLY PLAN

CENTRAL FLORIDA REGION

Owner

Central Florida Water Initiative

Completed

2017

Relevancy to the Authority

- Regional water supply planning
- Alternative water supply
- Conceptual design
- Hydraulic modeling

Description

The findings of the collaborative Central Florida Water Initiative (CFWI) and other efforts show the upper Floridan aquifer is presently providing nearly 96 percent of water supply demands within Polk County. Since there are limits to this resource and potential mitigation may be needed, Polk County and its city governments have identified a need to form a collaborative regional partnership, select implementable alternative water supply projects, and develop associated project implementation agreements related to these non-traditional/alternative water supply projects. Reiss was contracted to find at least 30-mgd of alternative potable water sources not associated with the upper Floridan aquifer.

The primary objectives of the project plan were to identify viable local options for conservation, water storage, and local/regional reclaimed water options to reduce potable water demands or mitigate existing local/regional impacts; identify implementable regional potable water supply strategies and assess their immediate and long term feasibility and sustainability; and determination of project viability, with consideration regarding permitting, environmental impact, costs, efficiencies, and achievement of regional CFWI and Southern Water Use Caution Area (SWUCA) comprehensive goals.

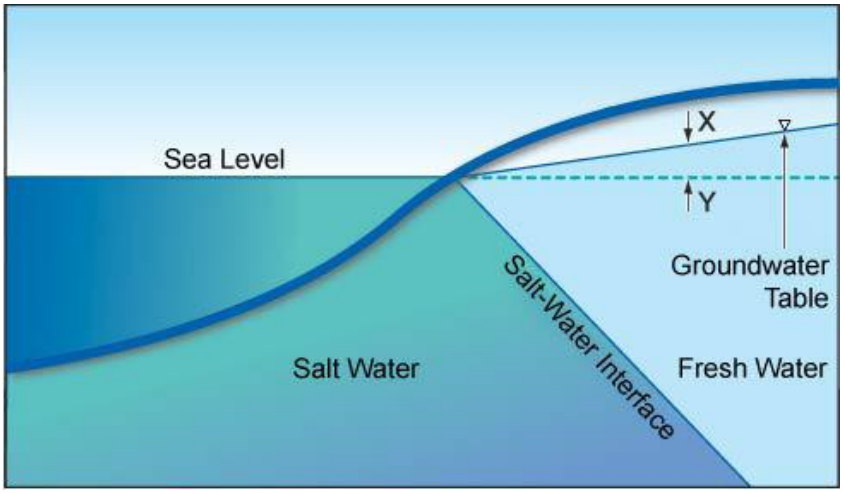
As part of this comprehensive water supply planning effort, Reiss consolidated information regarding potable water demands and existing potable water supplies. Analysis of various options included permit-ability, design considerations according to location and volume, economic considerations, and integration into the existing system.

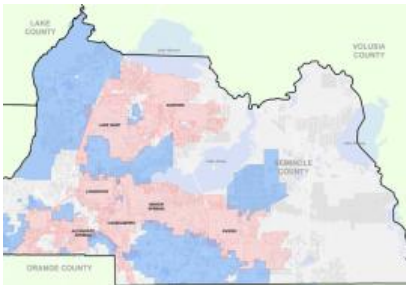
Reiss was successful in providing numerous options for the municipalities to accommodate demands beyond the 20 year planning period. Reiss designed a suggested implementation strategy that aids municipalities in planning future supplies. The water supply plan was applied to the region as a whole and was divided into individual reports for the local governments. The project required extensive coordination with the two water management districts, Polk County, and the 17 local governments to ensure projects would meet demands, as well as meet permitting requirements and potentially qualify for funding assistance.

The final product was a matrix of supplemental water supply alternatives and a comprehensive, concise master plan for the adequate and sustainable provision of water supply over the course of the planning period.

10-YEAR WATER SUPPLY FACILITY WORK PLAN

SEMINOLE COUNTY, FLORIDA





Owner

Seminole County Environmental Services Department

Completed

2017

Relevancy to the Authority

- Water resource
- Alternative water supply planning
- Regulatory
- Hydrology

Description

A specific requirement of Florida legislation is the completion of a 10-Year Water Supply Facilities Work Plan (work plan) by all counties and cities within a "water resource caution area". Seminole County is located within such an area and, therefore, engaged Reiss to assist them in the preparation of this work plan to meet the criteria set forth by the Florida Legislature. The Seminole County Environmental Services Department (SCESD) provides potable water service to unincorporated Seminole County customers.

This SCESD work plan presents Seminole County's strategies for providing potable water over the next ten years to its service area customers. The work plan provides a summary of population growth, current and projected potable water demands, existing water supply sources and treatment facilities, current design capacities, permitted withdrawals, and planned projects for the ten-year planning period. Florida legislation directed that alternative water supplies be identified, quantified and developed by affected municipalities, in addition to the implementation of local water conservation strategies and FDEP permitted water reuse programs. Reiss assisted the County with the preparation of the updated water supply plan to satisfy regulatory requirements and assist with updates to the comprehensive plan. This fast-tracked coordinated effort addressed data gaps and additional work identified after coordination with the Planning Department.

WATER SUPPLY OPTIONS MASTER PLAN UPDATE

ST. CLOUD, FLORIDA

Owner

City of St. Cloud

Completed

2017

Relevancy to the Authority

- Water resource
- Alternative water supply planning
- Regulatory
- Hydrology
- Conservation

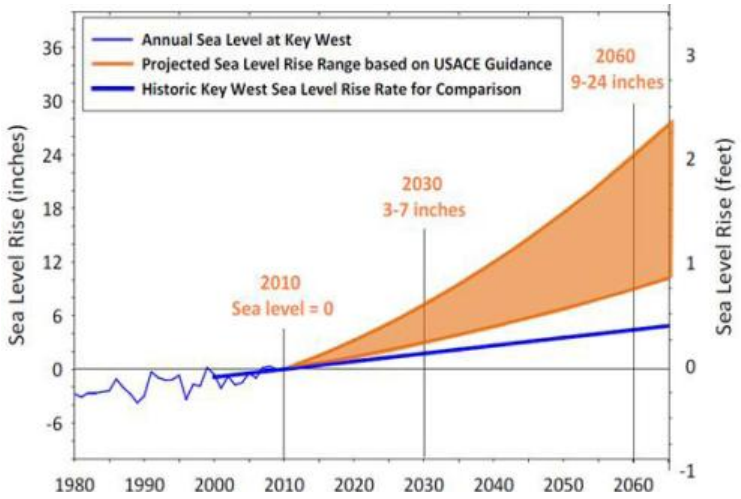
Description

The City of St. Cloud requested an update to the water supply portion of the Potable Water Master Plan. This update included a re-evaluation of the City's future potable and reclaimed water demands. Prior to developing and evaluating water supply options, an updated water supply needs assessment was performed to determine the City's future water supply needs. Projected water demands indicated the City would have an estimated 3.1 MGD AADF potable water supply deficit and an estimated 3.2 MGD AADF reclaimed water supply surplus by 2035. Three water supply alternatives to meet the water supply needs to 2035 and beyond were identified and evaluated for feasibility and cost along with other factors. These recommended alternatives included combinations of an expanded reuse system, indirect potable reuse, expanded Lakeshore Augmentation project and the Cypress Lake project. Other alternatives were investigated, including additional fresh groundwater, wholesale purchases, brackish groundwater, stormwater, and surface water alternatives were deemed to be less cost effective or not feasible.

It was determined the Cypress Lake project is a potential component of all three identified alternatives over a long-term (30-year) planning horizon. However, the high cost of the Cypress Lake project could create undesirable increases in water rates for the City's customers in the near-term. Therefore, it was recommended the City consider parallel implementation of the other water supply options identified in these alternatives because they may further delay the need for the Cypress Lake project. It was also recommended the City work closely with its project partners to identify options that could help to better align the capital expenses associated with the Cypress Lake project with the City's projected growth and resultant water supply needs.

COMPREHENSIVE UTILITY STRATEGIC MASTER PLAN

FORT LAUDERDALE, FLORIDA



Owner

City of Fort Lauderdale

Completed

2016

Relevancy to the Authority

- Master planning
- Alternative water supply planning
- Supply/demand projections
- Water conservation

Description

The Comprehensive Utilities Strategic Master Plan (CUSMP) is tied to the City of Fort Lauderdale's strategic planning efforts conceived to schedule improvements necessary to ensure reliable and/or improved service for the next twenty years (2015 to 2035). Additionally, the CUSMP evaluated the normal functions of water supply, water treatment, water high service pumping and distribution, wastewater collection, lift station pumping and wastewater treatment and disposal.
The CUSMP also contained evaluations and recommendations of policies, procedures and process improvements to increase energy conservation, monitoring and analysis, water conservation, and evaluations necessary to prepare for climate change and overall recommendations to increase the resiliency of the City's utility infrastructure. Components included:

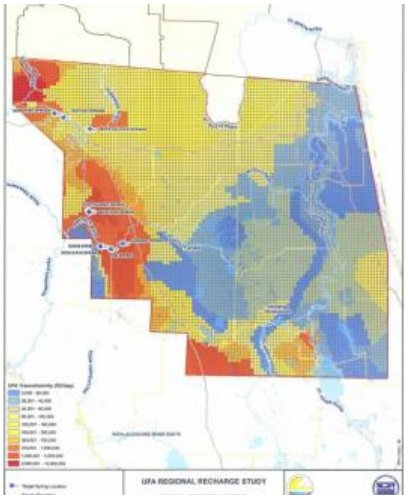
- Wastewater Collection/ Transmission Master Plan
- Water System Master Plan
- 20-Year Capital Improvement Plan (CIP)
- Water, Wastewater Collection/ Transmission Hydraulic Models

The project also included recommendations to increase energy efficiency and sustainability, as well as analyses regarding climate change and water conservation. In particular, Reiss recommended measures the City can take to address impacts to the wastewater system, including flows in the collection system, due to potential climate change and sea level rise.

Recommendations included the prioritization of rehabilitation projects in order to increase reliability of the conveyance systems and reduce I&I and flows to the WWTP. This was accomplished through development of new hydraulic models and flow projections to aid in capital project planning, improvements to reduce Infiltration and Inflow (I&I) flows based on pump station and rainfall data, and development of an implementation plan to monitor I&I at key locations.

UPPER SUWANNEE RIVER AQUIFER RECHARGE CONCEPTS

SRWMD AND SJRWMD, FLORIDA



Owner

St. Johns River Water Management District

Completed

2013

Relevancy to the Authority

- Alternative water supply planning
- Regional water supply
- Groundwater modeling

Description

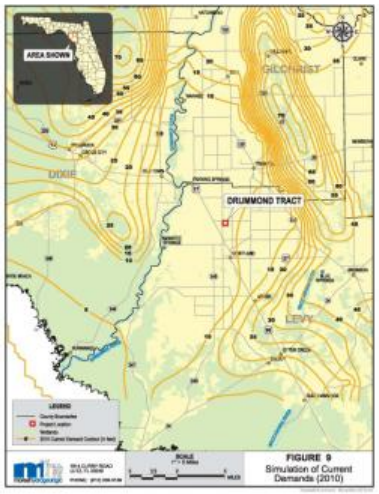
Hydro-Environmental Associates, Inc. (HEA) was selected by the Suwannee River Water Management District and St. Johns River Water Management District to conduct a hydrogeologic assessment of north central Florida. The purpose of the study was to identify and evaluate various concepts to protect, maintain, and restore regional aquifer levels by recharging the Upper Floridan Aquifer (UFA) at strategic locations. The areas of focus include the upper Suwannee River and Santa Fe River watersheds, and the Keystone Heights potentiometric high. Replenishment of the UFA in these areas could benefit surface water features including lakes, springs, and rivers; as well as contributing to the development of a sustainable water supply for the region.

HEA initially identified and evaluated numerous aquifer recharge options within the upper Suwannee River basin, and conducted groundwater flow modeling on several pre-screened sites to further assist in the evaluation process. HEA used the updated US Geological Survey MegaModel to conduct the groundwater flow analysis. The groundwater flow model was used to establish the benefits to the river systems, major springs within the Suwannee river, Ichetucknee, and Santa Fe rivers, as well as the potentiometric level of the UFA from each of the pre-screened options. HEA modified the existing MegaModel to include each of the proposed recharge options, and simulated the recharge characteristics of three indirect recharge options and three direct recharge options. The direct recharge options mainly consisted of aquifer recharge wells completed within the UFA, and the indirect options included the use of RIBS, sinkholes, and other natural geologic features.

The model was used to predict the benefits of each potential recharge option into selected target springs, including White Sulphur Springs, Suwannee Springs, Ichetucknee Springs, Blue Springs, Ginnie Springs, Poe Springs, and Hornsby Springs. Many of these springs have shown evidence of declining base flows.

D...MMOND TRACT WELLFIELD ASSESSMENT

LEVY COUNTY, FLORIDA



Owner

Suwannee River Water Management District

Completed

2010

Relevancy to the Authority

- Alternative water supply planning
- Regional water supply
- Groundwater modeling
- MFLs

Description

Hydro-Environmental Associates, Inc. (HEA), was selected by the Suwannee River Water Management District to conduct a hydrogeologic assessment of a proposed wellfield site, located in Chiefland, Florida. The purpose of the study was to assess the possibility of developing the property as a source of potable water for public supply for future planning purposes. The study considered the water supply needs of Gilchrist, Dixie, and Levy Counties plus the municipalities of Bell, Chiefland, Cross City, Fanning Springs, Trenton, and Old Town. Data was collected from the Bureau of Economic and Business Research (BEBR), the SRWMD, the Florida Geological Survey, and other sources. The data was used as a base to develop water supply demands for five year increments to the year 2030.

Each five year incremental public water supply demand was input into a modified version of the SRWMD's North Florida Model. The groundwater flow model was used to establish the drawdown impacts from pumpage and to quantify the impacts to nearby lakes, springs and rivers. HEA modified the existing North Florida Groundwater Model to include the proposed wellfield and refined the model grid spacing in the vicinity of the proposed wellfield. The model was used to predict the loss of flow into Fanning/Little Fanning Spring, Manatee Spring, and Levy Blue Springs. All of these springs have established minimum flows and levels (MFL)s and are located within Levy County.

Our team includes staff not only experienced in the Authority's scope of services but also in the management of similar projects in the State of Florida. The table below identifies recent relevant project experience and further demonstrates the team's ability to meet your needs under this contract.

Project Name/Client	Brief Description
City of St. Cloud Potable Water Master Plan **City of St. Cloud, FL**	Completed a water and wastewater master plan to map out future service plans while cost effectively optimizing existing service. This included revising potable water demand projections for use in the respective hydraulic models to simulate updated existing and future conditions. Reiss performed hydraulic evaluations and water quality evaluations to support start up and operation of the City's new state of the art WTP #4.
Orange County Southern Regional Water Supply Facility Orange County, FL	Conducted hydraulic modeling and field calibrating for water quality outputs. Calibrated a dynamic simulation for each of the 17 water facilities and operational regions, including over 70,000 pipes; updated the hydraulic model using the most recent demands; updated the 26 different steady state and dynamic scenarios; calibrated the extended period simulation (EPS) with updated water quality data; and used the distribution hydraulic model to optimize the system for water age, disinfectant residuals and disinfectant by-products for IDSE compliance.
City of Tampa Potable Water Master Plan **City of Tampa, FL**	Prepared a Potable Water Master Plan and 10-Year Work Plan. This master plan provided the TWD recommended capital improvements and implementation strategies for the next 10-years, designed to meet a 20-year planning horizon.
Polk County Water Supply Plan **Polk County, FL**	Identified and investigated new supplemental water supplies as a means to provide potable and non-potable water to Polk County and its 17 local governments to meet future demands.
Water Quality Modeling, Phase 1 **Orlando Utilities Commission, FL**	Evaluated OUC's distribution system, including hydraulic modeling, hydraulic verification, water quality calibration, water quality modeling, distribution system water quality optimization, and a desktop computer application that OUC planning, production, and water quality staff can use to track historical water quality sampling data and compare to model-predicted results.
Orange County Hydraulic Modeling Services Orange County, FL	Providing hydraulic modeling services to Orange County Utilities to update, operate, and utilize potable water, wastewater, and reclaimed water system hydraulic models for planning and conceptual design purposes. The engineering services include utilization of hydraulic models to support utilities planning, recommendation of capital improvements projects (including cost estimates), design, operation, and regulatory compliance.
City of Port St. Lucie Potable Water Master Plan **Port St. Lucie, FL**	This plan focused on potable water delivery, wastewater collection, and reuse delivery. Water delivery components included potable water and reuse product storage, as well as high service pumping and transmission/ distribution piping. Valuable planning and operational tools including water hydraulic models were developed and updated to assist with the planning.
Water Quality Analysis **Seminole County, FL**	Northeast and Southeast Service Area potable water system hydraulic models were updated such that multiple water quality parameters could be tracked and predicted, in addition to hydraulic measures. The water quality information was used to assess treatment needs.

7. Goals and Objectives

Goals

The Reiss team understands the primary goal of this project is to identify and plan for cost-effective and high quality water supplies to meet the future water demands of the Authority's member governments, Citrus, Hernando, Marion, and Sumter counties, and the municipalities within this four-county region. The plan should be a meaningful tool that can be used by the Authority and its member governments as they plan both regional water solutions and water infrastructure to serve their customers. The project will assess future public supply water demands through 2040, identify meaningful conservation and reuse programs and strategies, identify potential sources of future water supply including fresh groundwater and alternative water supplies and determine the necessary water supply infrastructure and timing of future water supply projects to meet the growing needs of the region.

A secondary goal of this project will be to provide valuable information to the SWFWMD and SJRWMD for their 2020 Regional Water Supply Plans. On September 26, 2017, the Southwest Florida Water Management District (SWFWMD) approved funding to update the Authority's Regional Water Supply Plan. This out-of-cycle funding request and approval was necessary so that the Authority can complete its important water supply planning effort in time for the SWFWMD to use the information in its 2020 Regional Water Supply Plan for its Northern Planning Region.

Objectives

The Reiss team understands the value of developing a document that can be utilized by both the Authority and its members when planning future water supply strategies. Specific objectives of the work and the value the Reiss team offers to the Authority and its members are summarized below.

Objective	Reiss Team Value
Updated population and associated water demands through Year 2040 (5-year increments)	◆ Develop projections for individual members as well as Authority-wide ◆ Identify differences in results between BEBR and member specific projections ◆ Assess sensitivity of per capita consumption rates
Quantify public supply conservation opportunities and reuse availability and potable water offsets	◆ Develop utility-specific conservation and reuse strategies with associated potable water offsets ◆ Explore opportunities for aquifer recharge
Assess availability of fresh groundwater and alternative water supplies (brackish water, surface water, seawater desalination)	◆ Focus on strategies to preserve existing supplies and satisfy MFL and regulatory requirements ◆ Focus on most economically feasible alternative water supplies including Indirect Potable Reuse (IPR)
Project feasibility and conceptual designs	◆ Leverage past Authority and member work and couple with Reiss team member experience building and operating regional systems and alternative water supplies to develop realistic conceptual designs and costs ◆ Focus on alternatives with potential to be cost-effective
Governance and cost sharing	◆ Provide feedback and guidance to Authority and members on how regional projects have successfully been implemented around Florida
Conclusions and recommendations	◆ Brief Executive Summary including matrix of future projects, rankings, participants, further actions, costs, and schedule ◆ Member government specific conclusions and recommendations documents that can be used by municipalities for compliance with water supply planning statutes

8. Project Approach

Member Government and Stakeholder Outreach and Facilitation

Our first task will be to meet with the Authority, its member governments, and the SWFWMD to review the objectives of the work for each stakeholder. Developing a clear understanding of the project and objectives at the onset of the project will allow our team to focus on the issues that are most important to the WRWSA and its members, thereby, maximizing the value of the Authority to member governments.

Together, Reiss and the stakeholders will roadmap the Authority's key objectives. Collaborative participation and input from the WRWSA, member governments, and the SWFWMD will lead to a meaningful and navigable path forward. The **Reiss team's goal is to develop a planning document that is relevant, usable, and useful to all stakeholders and achieves much more than a perfunctory regulatory checkmark.**

Mr. Ervin Myers' valuable and relevant experience with Tampa Bay Water and regional water supply projects makes him the perfect choice to lead the coordination efforts among the stakeholders for this project. He will help to accomplish project goals and increase meaningful functionality to the Authority. Mr. Myers will lead the partnership development coordination efforts, stakeholder engagement, and communications strategy by utilizing his extensive experience facilitating the System Configuration Programs I and II for Tampa Bay Water and its member governments as well as his role on other similar water supply planning projects such as the Heartland Water Alliance Water Supply Plan which included numerous municipalities across a four-county area in Central Florida.

Population and Water Demand Projections

Population and water demand projections will be updated in a manner that is adequately conservative to stakeholders and maintains approval and consistency with the SWFWMD's water supply planning efforts. The SWFWMD 2015 Water Supply Plan methodology to develop public supply water demand projections utilized data sources including the District's Estimated Water Use Reports (2008-2012) for base public supply water utility populations, water use, and per capita water use rates, the University of Florida's BEBR 2012 publications for base year population and future county population projections, and the District's geographic information system model to disaggregate population to the utility service area level. The challenge is updating the projections with current population and water use statistics as much of this data is 6 to 10 years out of date. Reiss has experience working with high profile water supply authorities, including recent work with the Polk Regional Water Cooperative and the Central Florida Water Cooperative, to negotiate/ coordinate demand projections that are justifiable and defendable. Aligning the update methodology with the SWFWMD will be one of the value propositions Reiss brings to the utilities. Member governments will have buy-in of the resulting numbers and will not need to duplicate efforts projecting future water demands.

Conservation and Reuse

One of the major success stories of the WRWSA is water conservation. Thanks in part to water conservation the North Planning Area is the only SWFWMD planning area that does not require alternative water supplies by 2035. Having established goals in the last plan for 2018, now is the time to set new goals and map out cost effective ways to achieve them. Mr. Ed Talton will lead this effort and worked with the water management districts in the 1990s on research to determine the most cost effective water conservation strategies. Fast forward to year 2018 and new water conservation tools are available to achieve increasingly optimistic conservation goals. Mr. Talton recently completed a detailed evaluation of the City of Fort Lauderdale's aggressive conservation system and will balance that experience with more rural WRWSA land use and water use habits. Reiss and Mr. Talton have completed numerous major reclaimed water planning efforts for Florida utilities, including master planning for Orange, Seminole, and Brevard counties. We firmly believe in the value of evaluating water conservation success and

are proficient at using water conservation demand models including public supply potential future potable water offsets from conservation and reuse using the Alliance for Water Efficiency (AWE) conservation tracking tool. The AWE conservation tracking tool will be used to prioritize water conservation and implementation of reclaimed water reuse efforts. The implementation of this tool and the continued planning area wide support of the WRWSA will provide a substantial benefit to member utilities.

Evaluation of Water Supply Options

Once the future water demand quantities are determined, various water supply sources to meet the projected demands will be assessed. These sources may include conservation programs, reclaimed water sources, groundwater, surface water, or development of combined sources. The 2014 Regional Water Supply Plan identified surface water was available from the Withlacoochee and Ocklawaha Rivers; however, the Reiss teams' preliminary assessment indicates the costs to develop water from these sources and deliver the water to the areas in need will be cost-prohibitive. Nonetheless, the most cost-effective approach to developing these surface water supplies will be developed as part of this plan should MFLs or other regulatory constraints prevent groundwater sources, reuse, and conservation from meeting future water demands.

Groundwater is considered the preferred source as long as it meets the regulatory requirements. That is, development of additional groundwater supplies will not violate established minimum flows and levels (MFL), interfere with any other legal user, cause environmental harm, and is in the public interest. To assess groundwater availability to meet future demands, further assessment of the Charles A. Black wellfield and other groundwater sources will be conducted. The assessment will determine whether the current set of wells can meet future demand through wellfield management techniques, wellfield expansion, or new wellfields. This option will require review of regulatory constraints, hydrogeologic review of the wellfield conditions, and assessment of well and aquifer characteristics.

Groundwater flow modeling is a critical tool for evaluating the groundwater supply option and other options as necessary. There are several existing groundwater flow models used by the water management districts that cover portions of the four-county area. However, none of the models commonly used cover the entire area. These models include the SWFWMD North District Model (NDM), the revised SWFWMD Districtwide Regulatory Model 3 (DWRM 3), and the SJRWMD North Central Model (NCM). This study will use the existing models, if necessary, to evaluate the proposed water supply options. The Reiss team is extremely familiar with and has used each of these models in previous applications and does not anticipate any new model development. We will evaluate these groundwater models, and then use the most appropriate model to assess spring discharge, river flow, and impacts to the established and proposed MFLs within the area of influence of the future water supply.

Conceptual Water Supply Projects and Feasibility

The conceptual water supply projects will consider the previous Authority reports and reports prepared for the Authority's members with a focus on the projects that have the highest economic feasibility. The Reiss team will focus on solutions that maximize the use of existing supplies and fresh groundwater supplies as those water supply solutions will be the most economical and avoid the challenges of introducing alternative water supplies such as surface waters into systems that are predominantly groundwater systems. The team will focus on options to interconnect utility systems to move permitted supplies to the areas with water supply deficits.

REISS WILL ASSESS THE FEASIBILITY OF ALTERNATIVE WATER SUPPLIES THAT MAY INCLUDE SURFACE WATER, INDIRECT OR DIRECT POTABLE REUSE, BRACKISH AND SEAWATER DESALINATION

The Authority will need to assess the feasibility of alternative water supplies such as surface water supplies, indirect or direct potable reuse, brackish water and seawater desalination. The Reiss team has the background and experience to quickly screen

the alternative water supplies to focus efforts on the alternative water supply options that have the greatest potential to be economically and technically viable over the planning horizon. Members of the Reiss team are uniquely qualified to assess these water supply options as key team members have first-hand experience developing surface water, brackish water desalination, seawater desalination, and reuse projects from concept through design, construction, and operations.

Specific tasks that will be performed to assess the viability of water supply projects include:

- Identify probable project participants
- Determine minimum, average, and maximum production requirements
- Assess treatment and transmission alternatives based on participant water demands and water quality expectations
- Evaluate further regional solutions that would make the project more cost-effective
- Evaluate potential sources of funding
- Develop a project phasing plan; some infrastructure is best to size for the ultimate capacity in the early phases while other infrastructure is best sized and developed in phases
- Develop conceptual capital, operating, and recurring costs for each project and evaluate potential water supply projects based on life cycle costs

Governance

The Reiss team will work with the Authority, member governments, the SWFWMD, and SJRWMD to develop ownership, governance, funding sources, water delivery and quality requirements, and cost sharing for proposed regional water supply projects. Mr. Myers, who will lead this task, has facilitated similar discussions with decision makers and stakeholders on the development of regional water supply projects and local water supply plans.

REISS HAS BEEN INVOLVED WITH SOME OF CENTRAL FLORIDA'S MOST CRITICAL REGIONAL WATER SUPPLY PLANNING EFFORTS TO HELP MEET INCREASING DEMANDS

The Reiss team has also successfully supported municipalities in Polk County in the development of the Polk Regional Water Cooperative which is now further evaluating water supply options identified and recommended for further study by Reiss. These projects are some of the most significant water supply projects being considered in Central Florida and the SWFWMD. Issues that will be addressed relating to governance and cooperation among the Authority and its members include:

- Ownership and operating responsibilities
- Financing options, including the use of public and private partnerships
- Project decision making options
- Cost sharing options

Conclusions and Recommendations

A cornerstone of the Reiss approach will be to develop documents that meet the needs of the SWFWMD and SJRWMD for their water supply planning efforts, while at the same time, provide a meaningful tool for the Authority and its members to use in the years to come. We will prepare a concise and easily readable summary of the findings and recommendations that can be easily extracted for use in the Districts' Regional Water Supply Plans. Water supply projects and configurations will be ranked from a financial, technical, and regulatory basis. More importantly to the Authority and its members, **the Reiss approach will include stand-alone sections for each member government summarizing their population projections, water demands, and water supply options** such that these stand-alone sections can be easily used to comply with other regulatory requirements such as comprehensive planning consistency with the Districts' regional water supply plans.

9. Representation of Authority Member Governments

Reiss currently holds a continuing contract with Citrus County. At present, there are no active work assignments with this contract.

10. Litigation against any of the Authority member governments

Reiss is not currently involved, nor have we ever been involved in litigation against any of the Authority member governments, either directly or retained for testimony or expertise on behalf of any other entity in litigation against the Authority or any of its members.

11. Client References

1

Seminole County Environmental Services Department
500 W. Lake Mary Boulevard
Sanford, FL 32773-7441

Contact
Rob Heaviside, PE
Senior Engineer
rheaviside@seminolecountyfl.gov
p. (407) 665-2117

Similar Project
10-Year Water Supply Facility Work Plan
Florida legislation directed that alternative water supplies be identified, quantified and developed by affected municipalities, with additional requirements in addition to the implementation of local water conservation strategies and FDEP permitted water reuse programs. Reiss assisted the County with the preparation of an updated water supply plan to satisfy regulatory requirements and assist with updates to the comprehensive plan. This fast-tracked coordinated effort addressed data gaps and additional work identified after coordination with the Planning Department.

2

The Water Cooperative of Central Florida
Toho Water Authority
951 Martin Luther King Boulevard
Kissimmee, FL 34741

Contact
Deborah Beatty, PE
Project Manager
dbeatty@tohowater.com
p. (407) 944-5023

Similar Project
Cypress Lake Potable Water Transmission, Optimization, and Interconnection Analysis & Conceptual Design
Reiss developed a conceptual design for transmission and optimization of the Cypress Lake supply water in concert with existing potable water sources to facilitate the efficient and cost-effective transfer and transmission of potable water among the Utilities Representatives. The primary goal of this project was to develop a cost-effective and reliable strategy to "wheel" existing water supplies between the utilities, and transmit and integrate Cypress Lake supply water into the potable water distribution systems.

3

City of St. Cloud
1300 Ninth Street
St. Cloud, FL 34769

Contact
Veronica Miller
Assistant City Manager/Public Services Administrator
vmiller@stcloud.org
p. (407) 957-7265

Similar Project
Integrated Water Supply Master Plan
Reiss and the City developed a course for the future water supply including an additional 1.7-mgd of water per year on an annual average daily basis to meet their projected potable water needs by the end of the planning period. Reiss also identified the City would need an additional 12.4-mgd per year on an annual average daily basis to meet projected potable water demands and an additional 7.8-mgd per year to meet the projected non-potable water needs. Reiss recommended the City pursue implementation of a hybrid system to provide adequate water supply for the reclaimed water system.

EXHIBIT A

WITHLACOOCHEE REGIONAL WATER SUPPLY AUTHORITY
REQUEST FOR QUALIFICATIONS
REQUIRED COVER PAGE

SUBMIT QUALIFICATIONS TO: Withlacoochee Regional Water Supply Authority
3600 W. Sovereign Path, Suite 228
Lecanto, Florida 34461

Direct Inquiries to: LuAnne Stout, Administrative Assistant
Phone: 352-527-5795 E-mail: lstout@wrwsa.org

DATE POSTED:	PROPOSALS WILL BE OPENED: January **26,** 2018

TITLE: WRWSA Regional Water Supply Plan Update

SPECIFICATIONS: This effort is to update the WRWSA Regional Water Supply Plan. Portions of the WRWSA Regional Water Supply Plan Update will be incorporated into the Southwest Florida Water Management District's (SWFWMD) Regional Water Supply Plan for its Northern Region. SWFWMD is a cooperator and is co-funding this work effort.

Respondent Name:	**Reiss Engineering, Inc.**
Mailing Address:	**3030 North Rocky Point Drive, Suite 161**
City-State-Zip:	**Tampa, FL 33607**
Telephone Number:	**813-549-0919**
E-mail address:	**ebmyers@reisseng.com**
Authorized Signature:	
Full Name (please print or type):	**Ervin Myers, Jr., PE, Project Officer**
Title (please print or type):	**Vice President**

We the above signed, as Respondents hereby declare that we have carefully read this Request for Qualifications and its provisions, terms, and conditions covering the equipment, materials, supplies or services as called for, and fully understand the requirements and conditions. We certify that this proposal is made without prior understanding, agreement, or connection with any corporation, firm, entity, or person submitting a proposal for the same goods/services (unless otherwise specifically noted), and is in all respects fair and without collusion or fraud. We agree to be bound by all of the terms and conditions of this Request for Qualifications and certify that we are authorized to sign this proposal for the Respondent.

IT IS THE RESPONDENT'S RESPONSIBILITY TO ASSURE THAT HIS/HER SEALED PROPOSAL IS DELIVERED AT THE PROPER TIME TO THE AUTHORITY. PROPOSALS WHICH FOR ANY REASON ARE NOT SO DELIVERED WILL NOT BE CONSIDERED.

EXHIBIT B

KEY PERSONNEL
For
REGIONAL WATER SUPPLY PLAN UPDATE

The Consultant's proposed project team/key personnel are to be indicated below. The Consultant's 'Project Officer' shall also be identified.

Person's Name	Job Classification	Area of Expertise	Office Location
Ervin Myers, Jr., PE	**Project Officer**	Water supply planning **and project manager**	Reiss Engineering **Tampa, FL**
Meifa Chen, PhD, PE	**Population/Demand Projections**	**Planning and modeling**	Reiss Engineering **Winter Springs, FL**
Edward Talton, Jr., PE	**Conservation and Reuse Strategies**	**Utilities planning and modeling**	Reiss Engineering **Winter Springs, FL**
Glenn Dunkelberger, PE, BCEE	**Ground and Surface** Water Treatment	Water Treatment	Reiss Engineering **Winter Springs, FL**
C. Robert Reiss, PhD, PE	**Brackish Water and Seawater Desalination**	Water quality and **treatment, filtration**	Reiss Engineering **Winter Springs, FL**
Allen Dethloff, PE	**Regional Water Supply Options**	Water, wastewater, **reclaimed water regional engineer**	Reiss Engineering **Tampa, FL**
Weston Haggen, PE	**Feasibility and Cost** Estimates	Water, wastewater, **reclaimed water regional engineer**	Reiss Engineering **Tampa, FL**
Kenneth Jones, PG	**Ground and Surface Water Resource** Availability	**Hydrology, water resources**	**Hydro-Environmental Associates Tampa, FL**
Robert Moresi, PG	**Ground and Surface Water Resource** Availability	**Hydrology, water resources**	**Hydro-Environmental Associates Tampa, FL**

EXHIBIT C

SWORN STATEMENT PURSUANT TO SECTION 287.133(3)(a), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted to the WITHLACOOCHEE REGIONAL WATER SUPPLY AUTHORITY by Ervin Myers, Jr., PE, Project Officer
(Print individual's name and title)
for Reiss Engineering, Inc.
(Print name of entity submitting sworn statement)
whose business address is 3030 North Rocky Point Drive, Suite 161, Tampa, FL 33607
and (if applicable) its Federal Employer Identification Number (FEIN) is 59-3546309
(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement: _____,

2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or of the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(l)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an "affiliate" as defined in Paragraph 287.133(l)(a), Florida Statutes, means:

a) A predecessor or successor of a person convicted of a public entity crime; OR

b) An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm=s length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public

6. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. **(Indicate which statement applies.)**

_X_ Neither the entity submitting this sworn statement, nor any of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, nor any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

___ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July l, 1989. However, there has been a subsequent proceeding before a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. **(Attach a copy of the final order.)**

I UNDERSTAND THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017 FLORIDA STATUTES FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

_____
(Signature)

STATE OF Florida

COUNTY OF Seminole

Sworn to and subscribed before me this day of 26th of January 2018 (Personally known) _____
OR produced identification _____
(Type of Identification)

Kimberly Jones
NOTARY PUBLIC
STATE OF FLORIDA
Comm# GG136890
Expires 9/25/2021

_____
Notary Public

Name (Printed) Kimberly Jones

My commission expires 9/25/21
(Printed typed or stamped Commissioned name of Notary Public)

APPENDIX

ERVIN MYERS, JR., PE
Project Officer

Office Location
Tampa, FL

Education
MS, Environmental Systems Engineering, Clemson University

BS, Civil Engineering, Penn State University

Registration
Professional Engineer: Florida No. 55397

Professional Affiliations
American Water Works Association

Summary
Reiss' assigned project officer, Mr. Ervin Myers, Jr., PE, who is located in our Tampa office, has more than 20 years of experience with the design and construction of water treatment plants, pump stations, earthen embankment repair and analysis, water quality issues, program management services, alternative water supply studies and issues, hydraulic modeling, water quality modeling, water supply planning and infrastructure improvements.

Mr. Myers has successfully supervised and coordinated complex, multi-disciplinary design teams and will be supported by a local team of discipline experts who will be assigned for each task. He will also oversee the performance of the Reiss subconsultants, ensuring they are utilized to their maximum potential and are performing in the best interest of the Authority.

Project Experience

10-Year Water Supply Facility Work Plan, Seminole County, FL. Principal-in-charge to assist the County with the preparation of an updated water supply plan to satisfy regulatory requirements and assist with updates to the Comprehensive Plan. This coordinated effort addressed data gaps or additional work required after coordination with the Planning Department. Tasks included data collection, service area population and water demand projections, SJRWMD coordination, and work plan preparation.

Tampa Bay Water System Configuration I and II Programs, Hillsborough, Pasco, Pinellas Counties, FL. Project/program manager for program management and system engineer for the System Configuration I Program to implement a new regional water supply and transmission system. Projects included a new surface water treatment plant, seawater desalination facility, raw water pumping stations, and more than 100 miles of large diameter pipelines. The System Configuration II Program projects included a 60-mgd expansion to a surface water treatment plant, expansions to raw and finished water pumping stations, additional storage, and additional transmission mains. Services included conceptual and preliminary designs, system and water quality modeling, design oversight, and construction management services.

Water Supply Plan, Heartland Water Alliance, DeSoto, Hardee, Highlands and Polk Counties, FL. Technical project manager responsible for the development of a water supply plan for Polk, Hardee, Highlands, and DeSoto counties. Project includes the development of both demand and supply projections for all water use categories and the preparation of a water supply plan for each county.

Phase I Water Supply Plan, Polk County, FL. Project manager responsible for the development of a water supply plan for Polk County. The project included

the development of a report that summarized the water needs for the 17 municipalities that are located within Polk County. The report identified future potable water needs by municipality, forecasts of beneficial reuse, opportunities for conservation, and potential water supply projects of interest to the municipalities.

Surface Water Treatment Plant Expansion, Tampa Bay Water, Tampa, FL. Project manager responsible for the conceptual design, owner's engineer, and construction management services for the expansion of a surface water treatment plant from 66-mgd to 120-mgd. The treatment process included pH adjustment, ballasted flocculation and sedimentation, ozonation, biologically active filters and a chlorine contact chamber. Solids handling facilities included backwash water clarifiers, gravity thickeners and belt filter presses. The project was being implemented using a design-build-operate delivery method.

Seawater Desalination Facility Remediation, Tampa Bay Water, Tampa, FL. Project manager responsible for the owner's technical Commissioning Team to support improvements to a 25-mgd seawater desalination facility. The treatment plant included a seawater intake and pumping station located along cooling water channels for a power plant, influent screens, media filtration, diatomaceous earth filters, cartridge filters, reverse osmosis membranes and post treatment. Services included on-site support to complete construction, start-up equipment and process trains, and commission the facility. Specific tasks included pilot studies to optimize full scale operations, evaluation of operational data, development of commissioning plans, data collection during start-up and commissioning and review of the facility's Acceptance Test Report.

C. Wayne Combee Water Treatment Plant and Wellfield, Lakeland, FL. Project manager responsible for an 8-mgd water treatment plant and wellfield. The treatment process included split treatment lime softening, recarbonation, filtration, fluoridation, and chlorination. The project included the design of two Accelator NS softening basins, gravity filters, a recarbonation system, a 5 MG above-grade storage reservoir, a residuals thickening basin, a 25-mgd high service pumping station, and five off-site groundwater wells. Services also included construction phase services.

Spring Hill Utility Acquisition Feasibility Study, Hernando County, Spring Hill, FL. Engineering manager responsible for performing a feasibility study for the acquisition of a water, wastewater, and reuse water system. Tasks included developing a replacement cost for each system, evaluating the water, wastewater, and reuse systems for regulatory compliance, and preparing a final report.

South Pasco Water Treatment Plant Improvements, Tampa Bay Water, New Port Richey, FL. Project manager responsible for the evaluation of fluctuating disinfectant residuals at an existing water treatment plant and the design of the water treatment plant improvements to improve the disinfection process. The improvements included above-ground pressurized vessels to increase chlorine contact time within a severely space-constrained site, static mixers to promote proper chemical mixing prior to sampling, and redundant feed locations to keep facilities in service while performing yard piping maintenance.

Southern Regional Water Supply Facility, Construction Services, Orange County, FL. Project manager for construction phase services associated with a new 30-mgd water treatment plant. The new plant includes a 3,000 lb/day ozone system for hydrogen sulfide treatment, sodium hypochlorite for disinfection, fluoride, high service pumping, and two 5 million gallon circular prestressed ground storage tanks. Five new supply wells were drilled.

SW Water Treatment Plant Expansion, Orlando Utilities Commission, Orlando, FL. Project engineer responsible for a 15-mgd expansion to an ozone WTP. The project included the design of ozone basins for hydrogen sulfide removal and the development of production wells. Reviewed contractor submittals, obtained construction permits, performed field inspections, prepared conformed construction records, and developed O&M manuals.

EDWARD TALTON, JR., PE
Conservation and Reuse Strategies

Office Location
Winter Springs, FL

Education
MSE, Environmental Engineering, University of Florida

BSE, Environmental Engineering, University of Florida

Hydraulic Surge Modeling Training, University of Kentucky

Registration
Professional Engineer: Florida No. 47023

Filter Surveillance Workshop – AWWA

Professional Affiliations
American Water Works Association

Summary
Mr. Talton is a specialized expert in the field of master planning including regional cooperation. Ed performed his first master plan in 1989 and has 28 years of experience in water, wastewater and reuse master planning, project development and design, water conservation, advanced water treatment, hydraulic modeling, pipeline/pump station design, reuse feasibility and permitting. His regional planning experience includes a 60 MGD regional wastewater collection and treatment system in Ft. Lauderdale, the Water Cooperative of Central Florida, Polk Regional Water Cooperative, Volusian Water Alliance and Miami-Dade County. One recent regional project, AFIRST was a collaboration of two Cities, the FDEP, FDOT and the SJRWMD to capture stormwater from Interstate 4 expansion and supplement reclaimed water supplies. One recent master plan with the City of St. Cloud assisted the City with implementation of Florida Water Star standards.

Mr. Talton was the primary researcher and co-author for the SJRWMD's "Cost Effectiveness of Water Conservation Strategies", completed over 10 major reuse feasibility studies including all of Brevard County, Miami-Dade water and sewer, and Pinellas Park including master planning some of Central Florida's premier reclaimed water reuse distribution systems. His recent progressive project with the City of Fort Lauderdale included updating the City's already renowned water conservation program with progressive programs including ozone laundry treatment incentives. Mr. Talton has expertise in ground and surface water supply development and treat-ability, reverse osmosis facility design, wastewater treatment process, biosolids management, implementation support work including CIP and mapping updates, WTP site acquisition, operational optimizations, hydraulic model maintenance and development review. Mr. Talton also specializes in the dynamic modeling of water, wastewater and reclaimed water piping systems. Mr. Talton has significant experience in water conservation and quality modeling and the latest modules for unidirectional flushing of potable water systems.

Project Experience
10-Year Water Supply Facility Work Plan, Seminole County, FL. Project manager to assist the County with the preparation of an updated water supply plan to satisfy regulatory requirements and assist with updates to the comprehensive plan. This coordinated effort addressed data gaps or additional work required after coordination with the Planning Department. Tasks included data collection, service area population and water demand projections, SJRWMD coordination, and work plan preparation.

Cypress Lake Potable Water Transmission, Optimization, and Interconnection Conceptual Design, Water Cooperative

of Central Florida, FL. Project manager for the development of a 36-mgd conceptual design for transmission and optimization of the Cypress Lake supply water in concert with existing potable water sources to facilitate the efficient and cost-effective transfer and transmission of potable water among five major Central Florida utilities.

Cost-Effectiveness of Water Conservation, St. Johns River Water Management District, FL. This project included a nationwide literature review and expert interviews of the effectiveness (water savings) and cost of various water conservation techniques. The project summarized the cost effectiveness of various options, including toilet/plumbing retrofits, system audits, leak detection, and repair and irrigation audits.

Water/Wastewater Master Plan Update and Revenue Sufficiency, St. Cloud, FL. Project engineer to complete an update to address the City's CIP projects and several large developments of regional impact (DRIs) modified phasing plans. Developed a water, wastewater, and non-potable water master plan for existing and projected flows/demands, updated the hydraulic model, and used this tool to evaluate the suitability of current impact fees and rates to determine if adjustments to the rates were necessary.

Comprehensive Utility Strategic Master Plan, Fort Lauderdale, FL. Project manager for a master plan to evaluate the entire utility system and recommend capital improvement projects, actions, policies, or code changes necessary to maintain and improve the system's condition, capacity, performance, efficiency, and quality of service while planning for the future repair and replacement of utility system components. The plan included a detailed assessment of current conservation measures and recommendations for program expansion to meet the City's sustainability goals.

Water, Wastewater, and Reuse **Master Plan, St. Cloud, FL.** Completed an update to the City's utilities master plan to triple the size of the utility over the next 15 years. GIS and hydraulic modeling were used to locate future development needs and cost effectively size infrastructure.

Water, Wastewater, and Reuse **Master Plan Update, Port St. Lucie, FL.** Completed an update to the City's utilities master plan to evaluate the utilities growth over the next 15 years. GIS and hydraulic modeling were used to locate future development needs and cost effectively size infrastructure.

Reuse Master Plan, Seminole County, FL. Completed a reuse master plan with web-based output applications. Future reuse demands were identified and served using GIS and hydraulic modeling to cost effectively expand the system.

Northwest Service Area Reuse Master Plan and Implementation Strategy, Seminole County, FL. Completed a reuse master plan for the Northwest Service Area. Calculated reuse demands using GIS, assigning existing customers to the County's GIS map and database. A hydraulic model and implementation schedule and phasing were prepared.

Reuse Feasibility Study, Miami-Dade County, FL. Completed a comprehensive study of reuse alternatives for the County using computerized demand projection, and hydraulic and cost analysis models.

Reclaimed Water Public Access Reuse Capacity Summary, Ocoee, FL. Project manager responsible for completing the response to the FDEP for an R-002 permit reuse expansion by completing a list and scaled map of proposed reuse application sites with respective irrigable areas, application rates, capacities, and identified site names. Provided coordination for the permit application with the FDEP to request for additional information (RAI) responses.

SCRWS Reuse Master Plan, Brevard County, FL. Comprehensive reuse master plan, which included reuse demand estimation, backup effluent disposal, and service area permitting.

Volusian Water Alliance Strategic Water Supply Plan, Volusia County, FL. Development of a strategic water supply plan for a consortium of public utilities. The plan was part of the SJRWMD's Water 2020 Plan. The plan included cost and constraint optimization of current and alternative water supplies, including interconnections to meet future water supply needs.

MEIFA CHEN, PHD, PE

Population and Water Demand Projections

Office Location
Winter Springs, FL

Education
PhD, Civil Engineering, Clemson University

MS, Hydraulics and River Dynamics, China Institute of Water Resources & Hydropower Research, Beijing, China

BS, Water Resources, Wuhan University, Wuhan, China

Registration
Professional Engineer: Florida No. 66985

Professional Affiliations
Florida Water Environment Association

North American Society for Trenchless Technology

Summary

A well-recognized master planning and hydraulic modeling expert, Dr. Chen has more than 25 years of strong technical experience in water, wastewater, and stormwater hydraulic modeling, wet utility master planning, hydraulic design, and project management. He is proficient in nearly all hydraulic modeling programs including InfoWorks ICM, InfoWorks CS, InfoWorks WS, InfoWater, InfoSWMM, MikeUrban, WaterGEMS, SewerGEMS, EPANet, SWMM5, ICPR, and HEC-RAS. He has performed hydraulic designs for water, sewer and stormwater pipelines, pump stations, reservoirs, storage tanks, hydraulic control structures, and wastewater treatment plants.

Project Experience

Integrated Water/Wastewater Master Planning, Jeddah, Saudi Arabia. Dr. Chen led the master planning and wastewater system modeling for this project. He was involved in all aspects of the project including data collection and conversion, population and demand projection, model development, system analysis, system improvement and expansion, capital improvement project costing and staging, and report writing. This was the first comprehensive master plan project in Jeddah, there was very little GIS data available for the wastewater system.

Jeddah City Water and Wastewater Master Plan **Update Training, Jeddah, Saudi Arabia.** Project manager for the 10-day intensive training for 36 clients. The training covered project cycles, master plan update needs, population/ water demand/wastewater flow projections, hydraulic modeling, alternative development, cost estimate, economic analysis, development of CIP program, wastewater treatment, reclaimed water reuse, odor control, design and construction of water and wastewater projects.

Integrated Water/Wastewater Master Planning, Riyadh, Saudi Arabia. Dr. Chen led the sanitary sewer system modeling and analysis for this project. A comprehensive hydraulic model was developed and system improvements were identified.

Regional Wet Weather Management Plan, Hampton Roads Sanitation District, VA. As task leader, Dr. Chen led the comparative analysis between non-regionalization and regionalization flow scenarios for North Shore. The results were used to guide the regional wet weather management plan development.

Comprehensive Wastewater and Stormwater Management Plan, Revere, MA. Dr. Chen led the development of sanitary and stormwater system hydraulic models, investigation of system interaction, evaluation of existing and future systems, alternatives analysis, and development of feasible alternatives.

C. ROBERT REISS, PHD, PE

Brackish Water and Seawater Desalination

Office Location
Winter Springs, FL

Education
PhD, Environmental Engineering, University of Central Florida

MSE, Environmental Engineering, University of Central Florida

BSE, Environmental Engineering, University of Central Florida, Cum Laude

BSE, Civil Engineering, University of Central Florida

Registration
Professional Engineer: Florida No. 53794

Professional Affiliations
American Water Works Association

American Membrane Technology Association

American Society of Civil Engineers

Summary

Dr. Reiss has been involved with advanced water and wastewater treatment systems, including membrane technologies, for the past 25 years. His experience includes detailed design, process engineering, and technical review of membrane treatment systems, including seawater, groundwater, and fresh surface water systems. This experience includes microfiltration, ultrafiltration, nanofiltration, and reverse osmosis technologies. In addition, he has similar experience with conventional coagulation systems, media filtration, and other advanced treatment technologies.

Project Experience

Integrated Regional Water Supply Plan, Polk County, FL. Principal-in-charge to provide options for the municipalities to accommodate demands beyond the 20 year planning period. Reiss designed a suggested implementation strategy that aids in planning future supplies. The Comprehensive Water Supply Plan was applied to the region as a whole and was divided into 17 individual reports.

Brackish Reverse Osmosis Water Treatment Plant #2, Clearwater, FL. Principal-in-charge for the design of the City's new 6.25-mgd RO WTP #2 with approximately $30 million in construction costs. The objectives of the project were to conserve water, produce high water quality from brackish and fresh groundwater, and design a state-of-the-art RO facility.

Desalination of Seawater Under the Influence of Surface Water Runoff, FL. Principal-in-charge of a U.S. Bureau of Reclamation-funded pilot study of seawater desalination. Included assessment of pretreatment alternatives (conventional media filtration versus UF), design optimization, and pathogen removal. Pilot sites included Cape Canaveral (East Coast) and Tampa (West Coast).

Seawater Desal I Pilot Study, Tampa, FL. Project manager of pilot operations for a seawater pilot testing program to support Tampa Bay Water's 25-mgd design. Supported development of the testing program and was solely responsible for operational aspects of the pilot system, including training of staff, data collection, and pilot analysis.

Seawater Desalination Design Review, Tampa, FL. Technical reviewer for Poseidon Resources, the developer. Included analysis of pretreatment, RO design documents. Participated in the preparation of the concentrate discharge permit, including chemical characterization and analysis, interpretation, and responses to FDEP RAIs.

Surface Water Treatability Study, Stafford, TX. Principal-in-charge, process engineer, and QA/QC officer for source water evaluation, treatment selection, pilot testing, and preliminary engineering for a new surface WTP treating the American Canal for the Fort Bend County Water Control and Improvement District No. 2.

GLENN DUNKELBERGER, PE, BCEE

Groundwater and Surface Water Treatment

Office Location
Winter Springs, FL

Education
MS, Environmental Engineering, Ohio State University

BS, Civil Engineering, Ohio State University

Post Grad, DIP Water Technology and Desalination, Heriot Watt University

Registration
Professional Engineer: Florida No. 38310

Professional Affiliations
American Academy of Environmental Engineers

National Council of Examiners for Engineering and Surveying

Chi Epsilon, Civil Engineers Honorary

American Water Works Association

American Society of Civil Engineers

Summary

Mr. Dunkelberger has 45 years of experience in the civil/environmental engineering and construction field. Experience includes planning, pilot studies, process operations, detailed design, design-build, and construction management. Areas of relevant technical expertise are water, wastewater, and reuse treatment and advanced process technology.

Project Experience

Reverse Osmosis Water Treatment Plant Design Services, Vero Beach, FL. Engineer-of-record for the design and construction management for the expansion of reverse osmosis (RO) treatment facilities. The City owned and operated a 3.3-mgd RO water treatment facility (WTF) and planned to increase the ROWTF capacity. The RO skid was rated at 2.0 mgd, and the City planned on expanding the capacity of the ROWTF to 4.5 mgd to improve the finished water quality and decrease the operation of the lime softening plant.

Brackish Reverse Osmosis Water Treatment Plant #2 Design Services, Clearwater, FL. Engineer-of-record for the design of the City's new 6.25-mgd RO WTP #2, with approximately $30 million in construction cost. The objectives of the project were to conserve water, produce high water quality from brackish and fresh groundwater, and design a state-of-the-art RO facility.

South Water Treatment Plant Granular Activated Carbon Addition Design and Construction Engineering Inspection Services, Casselberry, FL. Engineer-of-record for the design to upgrade treatment at the South WTP by adding granular activated carbon (GAC) to improve the water distributed to its customers. Pilot study activities at a 4.9-mgd WTP confirmed the viability of GAC to achieve the desired goals and to better define design criteria, and capital and annual operation costs.

New Raw Water Intake **Facilities, Bowling Green, OH.** Engineer-of-record for the addition of a new intake system and pumping station, including design and engineering services during construction. The station is designed to supply raw water to the integrated membrane treatment plant and serves as backup to feed the conventional treatment facilities.

Southeast Regional Water Treatment Plant Treatment Process Selection and Evaluation, Seminole County, FL. Engineer-of-record for pilot study and preliminary design report. The SCESD owns and operates the 19.4-mgd Southeast Regional WTP, which is the primary WTP serving the Southeast Service Area (SESA). The plant treats raw water from six adjacent groundwater wells, which contain high levels of hydrogen sulfide and organics.

ALLEN DETHLOFF, PE
Regional Water Supply Options

Office Location
Tampa, FL

Education
BS, Civil Engineering, Construction Management, University of Florida

Registration
Professional Engineer: Florida No. 66382

Professional Affiliations
Florida Water Environment Association

North American Society for Trenchless Technology

Summary
Mr. Dethloff offers a wide range of experience in civil engineering, process mechanical engineering, permitting, and construction management. He brings 15 years of experience in preliminary design, final design, permitting, bidding, and construction administration for pipelines (including various trenchless technologies), sanitary sewer collection systems, pumping stations, water, wastewater facilities, chemical feed systems, and stormwater management system improvements.

Project Experience

Master Water Plan Update, Tampa Bay Water, Tampa, FL. Staff engineer responsible to update the Master Water Plan and review feasibility studies for selected developmental projects by Tampa Bay Water consultants. Performed supply/demand analyses for Tampa Bay Water's six member governments' service areas. Updated demand projections for said service areas.

Regional Water Treatment Plant System Enhancements, Contract 1, Tampa Bay Water, FL. Design engineer for the civil and mechanical design and coordination of the acquisition of county and state permits to modify/upgrade various facilities at the regional water treatment plant site. Modifications included the addition of an aqua ammonia storage/feed system, a domestic/process water booster pumping station, and a sodium hypochlorite storage/feed system. Responsibilities included development of specifications, piping layout, preparation of addenda, and final design drawings for equipment in the sodium hypochlorite storage/feed building.

Water Disposal Facility Design, Tampa Bay Water, Tampa, FL. Design engineer assisting in design of an "Off-Spec Water Disposal Facility" for Tampa Bay Water's regional transmission system. Responsibilities included investigating potential locations, investigating permitting requirements, and design of structure and associated piping.

Eldridge–Wilde Hydrogen Sulfide Treatment Facility, Pinellas County, FL. QA/QC providing technical design support and review of detailed design documents for improvements to an existing hydrogen sulfide removal facility and existing points of connection between Tampa Bay Water and Pinellas County. The project included civil, process mechanical, electrical, and instrumentation elements for design and construction of the new infrastructure, as well as demolition of existing infrastructure.

Wet Well Design, Tampa Bay **Water, Tampa, FL.** Staff engineer who assisted in the mechanical design of upgrades to a wet well that supplies potable water to two lime slaker systems and an alkalinity adjustment facility. Responsible for research, selection, design calculations, specifications, layout, piping, and final design drawings.

WESTON HAGGEN, PE
Feasibility and Cost Estimating

Office Location
Tampa, FL

Education
MSE, Civil Engineering, University of Central Florida

BSE, Civil Engineering, University of Central Florida

Registration
Professional Engineer: Florida No. 77777

FDOT Certification Maintenance of Traffic (MOT) Intermediate, No. 4169

NASSCO PACP/MACP/LACP Certification No. 07004925

Professional Affiliations
Florida Section American Water Works Association

American Society of Civil Engineers

Summary
Mr. Haggen is experienced in water, wastewater, and reclaimed water. Projects include pipeline design, water quality hydraulic modeling, master planning, lift station design, potable water quality improvement, unidirectional flushing, inflow and infiltration (I/I) studies, construction administration, preliminary design of wastewater and water plants, regulatory permitting, water treatment pilot studies, feasibility studies, report writing, and data management, including geographic information systems (GIS) for a variety of municipal and government projects in water and wastewater treatment.

Project Experience
Cypress Lake Potable Water Transmission, Optimization, and Interconnection Conceptual Design, Water Cooperative of Central Florida, FL. Project engineer for the development of a 36-mgd conceptual design for transmission and optimization of the Cypress Lake supply water in concert with existing potable water sources to facilitate the efficient and cost-effective transfer and transmission of potable water among five major Central Florida utilities.

Reedy Creek Improvement District Reclaimed Water System Analysis and Update, Orange County, FL. Project engineer responsible for updating the hydraulic model, evaluating and verifying the reclaimed water hydraulic model computer simulation, hydraulically evaluating the existing reclaimed water distribution system, updating future reclaimed water demand projections, hydraulically evaluating future reclaimed water distribution conditions, and providing recommendations for improvements to meet RCID criteria for existing and future conditions.

Reverse Osmosis Water Treatment Plant #1 Concentrate Water Quality Investigation and Inline Booster Pump, Clearwater, FL. Project manager for an investigation and evaluation to determine the cause of the high silt density index (SDI) values. A preliminary design report was completed to improve the existing pump station and to ensure that the proposed improvements between Reverse Osmosis (RO) Water Treatment Plant (WTP) #1 to RO WTP #2 are protected hydraulically.

Florida Seawater Desalination Marketing Analysis, Poseidon Resources Corporation, FL. Project engineer for a market analysis, including a historical perspective of water supply in Florida, current water supply demands, demand forecasts, water rate history, trends, and an investigation into the regions of the state where new water supply is planned or needed. The report summarized both short-term (three- to five-year) and long-term (10-to 20- year) potable water needs for Florida utilities.

J. RICHARD VOORHEES, PE, BCEE
Quality Assurance/Quality Control

Office Location
Winter Springs, FL

Education
MS, Civil/Environmental Engineering, Auburn University

BS, Civil Engineering, Auburn University

Chi Epsilon Civil Engineering Honorary Fraternity

Registration
Professional Engineer: Florida No. 25385

Board Certified Environmental Engineer (BCEE) Certificate No. 98-20040 for Specialty in Water and Wastewater

Professional Affiliations
American Society of Civil Engineers

Water Environment Federation

American Water Works Association

Summary
Mr. Voorhees has 43 years of experience and is highly qualified in the planning, design, construction, start-up and operation of water and wastewater treatment and pumping facilities. Mr. Voorhees has been the project or design manager for the design and construction of multi-million dollar water and wastewater facility projects and has previous experience as a general contractor for water and wastewater facility construction. Mr. Voorhees also worked for a large private utility in Florida and was responsible for the administration of the entire engineering and construction program for the utilities water and wastewater facilities.

Project Experience
FOSPAC Phosphate Plant, Seawater Desalinization Water Treatment Plant, Bayovar, Peru. Lead process and process mechanical engineer to provide basic engineering services for the design of a seawater desalinization water plant to produce 2.2 MGD of permeate water. The primary purpose for the finished water was to provide a final phosphate process final rinse water with a very low chloride concentration (<100 mg/L). Secondarily the finished water would be used to provide potable water for the plant staff and miners for the plant and mine that would operate 24 hours a day, 7 days a week, 320 days per year.

Water Blending Facility, Pinellas County, FL. Assistant project manager and lead technical engineer for the Basis of Design (Schematic Design) for the Pinellas County Utilities Water Blending Facility (WBF). The total design fee for this project was $2.4 million. Mr. Voorhees was the main point of contact with his company and other subconsultants on the project regarding all technical matters. Mr. Voorhees was also involved extensively with QA/QC of project deliverables and coordinated the QA/QC program for the project.

20 MGD Lake Washington Surface Water Treatment Plant Evaluation, Melbourne, FL. Senior technical manager for evaluation of the 20-mgd surface water treatment plant. The study was for the purpose of determining the improvements necessary for the plant to meet proposed USEPA rules required by the 1996 Safe Drinking Water Act Amendments including the D/DBP and the ESWTR Rules. The study evaluated existing equipment and processes and proposed that at least three new processes be pilot studied. Costs for proposed improvements and an implementation plan were included in the study.

7.0 MGD Water Treatment Facility Master Plan, Lake City, FL. Project manager for the project which included evaluation of two water plant locations with different treatment requirements at each location including enhanced lime softening and aeration-disinfection. Both alternatives included hydrogen sulfide removal using forced draft, packed tower aeration.

KENNETH JONES, PG
Groundwater and Surface Water Resource Availability

Office Location
Tampa, FL

Education
BA, Geology, University of South Florida

Registration
Professional Geologist: Florida No. PG00247

American Institute of Professional Geologists (AIPG), Certificate No. 7296

Professional Affiliations
Florida Association of Professional Geologists

Florida Section, American Water Resources Association

Tampa Bay Association of Environmental Professionals

Summary
Mr. Jones has 40 years of experience in hydrogeologic consulting and is knowledgeable in all aspects of Florida geology and groundwater analysis. He offers extensive experience in groundwater flow modeling to determine drawdown impacts, contaminant migration, efficiency of pumping systems, and data analysis and interpretation. Responsible for hydrogeologic investigations, supervision of exploratory drilling, wellsite stratigraphic analysis and well design, and water supply investigations. His duties have involved long-term evaluation of wellfield impacts on wetlands; water supply planning and water use permitting; well site feasibility studies; well design; drilling contracting; and well construction supervision and oversight.

Project Experience
Drummond Tract Wellfield Assessment, SRWMD, FL. Assessed the feasibility of developing a public water supply at the Drummond site, located in Chiefland, Florida for the SRWMD. The assessment included evaluating hydrogeologic conditions, well design, BEBR population projections, and future water demands. The North Florida groundwater flow model was used to establish the drawdown impacts from pumpage and to quantify the impacts to nearby lakes, springs and rivers, and MFLs.

Regional Aquifer Recharge, SRWMD/SJRWMD, FL. Evaluated several options for recharging the upper Floridan Aquifer in the upper Suwannee River basin by using excess surface water. Groundwater flow modeling was performed using the USGS MegaModel to quantify the impacts to springs, rivers, MFLs, and groundwater levels.

Mecca Reservoir Assessment, South Florida Water Management District, FL. Conducted a hydrogeological assessment of the proposed reservoir site in northwestern Palm Beach County. This reservoir will be designed to take excess flows from the east side of Lake Okeechobee during the rainy season, for storage, recharge, and treatment. As a part of this study, SFWMD's Lower East Coast Subregional-North Palm Model was modified to evaluate the groundwater impacts of the proposed reservoir on the adjacent wetlands, streams, and aquifer levels.

Forest Lake Crystal Lagoon Study, Hillsborough County, FL. Conducted a hydrogeologic study of a proposed manmade lagoon located in southeast Hillsborough County to determine the water use requirements and recharge potential. Revised the SWFWMD DWRM2 groundwater model to evaluate the impacts of the proposed lagoon and to determine the water balance.

ROBERT MORESI, PG

Groundwater and Surface Water Resource Availability

Office Location
Tampa, FL

Education
Graduate work in Geology and Engineering, University of South Florida

BA, Geology, University of South Florida

BA, Natural Sciences, University of South Florida

Registration
Professional Geologist: Florida No. PG00281

Professional Affiliations
American Water Resources Association, Past President

Summary
Mr. Moresi has 47 years of experience in the assessment and management of natural resources. His experience includes 10 years with three water management districts. His experience has ranged from directing regulatory programs to acting as senior hydrogeologist assessing water resources availability. His project experience has included multiple county studies; design and implementation of hydrogeologic and well construction projects; assessing alternative water availability; developing municipal master plans; conducting wellfield studies for expansion and protection; implementation of regional regulatory programs; managed multi-discipline studies to meet future water supply demand; and prepared wellfield protection plans.

Project Experience

Charles A. Black Wellfield Assessment, Withlacoochee Regional Water Supply Authority, FL. Senior hydrogeologist for the preparation of the status report for the Charles A. Black Central Citrus County Wellfields and Water Treatment Facilities. The study included assessment of the system equipment and their performance including wells, treatment facilities, storage capacity, piping and transmission, pumping facilities, power requirements, and permitting and compliance issues.

Drummond Tract Wellfield Assessment, SRWMD, Chiefland, FL. Senior hydrogeologist for the study to assess a potential wellfield site to meet future regional water supplies. The assessment included hydrogeologic conditions, well design, MFL impacts, environmental protection, and regulatory requirements. BEBR population projections, and future regional water demands were considered.

Heartland Water Alliance, Central FL. Senior hydrogeologist providing oversight and technical support for the assessment of water resources and development of alternative water supplies for four central Florida counties and their cities to meet 2030 water supply demands using BEBR projections, regulatory constraints, environmental issues, surface water sources, groundwater sources, and alternative supplies. The study developed a ranking program to judge the alternatives, and project the best future water supply options to meet the demand while considering the cost and the environment.

Regional Aquifer Recharge, SRWMD/SJRWMD, FL. Senior hydrogeologist for the assessment of the upper Floridan Aquifer system and the potential for successfully recharging the system using available water from the Suwannee River based on available public lands. The study included computer modeling to assess environmental impacts, changes to potentiometric levels, and MFLs.

Submitted by:

Reiss Engineering, Inc.
3030 North Rocky Point Drive, Suite 161
Tampa, FL 33607
813.549.0919

Ervin Myers, Jr., PE
Project Officer

PLANNING | DESIGN | CONSTRUCTION

From the initial stages of project planning to the construction and start-up of complex facilities, Reiss has positioned our firm as a leader in providing full-service civil and environmental engineering solutions that meet the growing challenges our clients face.

REISS ENGINEERING

January 24, 2018

Mr. Richard S. Owen, Executive Director
Withlacoochee River Water Supply Authority
3600 W. Sovereign Path, Suite 228
Lecanto, FL 34461

RE: SOQ – Regional Water Supply Plan Update Services (RWSP)

Dear Mr. Owen:

On behalf of Water Resource Associates, LLC (WRA), I am pleased to submit our qualifications for the Regional Water Supply Plan Update Services solicitation by the Withlacoochee Regional Water Supply Authority (WRWSA). The SOQ requires engineering services but the project also involves hydrogeology, planning, environmental systems and water quality expertise. Our Project Team consisting of WRA and GIS Associates, fills those requirements with staff that are experts in their fields, have vast local knowledge of the resource and we are proximate to the WRWSA. Another important consideration when considering WRA for this work is "who you see" in this submittal is "who you are going to get" working on the RWSP. Unlike bigger firms, who will often promise attention by their senior staff members only to shuffle the work to whomever is not busy, the WRA Project Team represented in our submittal will all have active roles in the production of this report.

As you are aware, WRA has been actively involved with the WRWSA in many different roles over the years. Our General Services Contract has provided the Authority's Executive Directors both technical and administrative expertise and support. This has enabled WRA to stay in the forefront of the many issues facing Authority members and the WRWSA itself. The very relevance and structure of the Authority is currently being questioned by members at a time when your role in regional water supply protection and development is never more critical. WRA considers this RWSP update as an opportunity to further educate members and other stakeholders on how complex water resource management and development has become; the water supply future of the Northern Planning Region; and the important role that the WRWSA has in ensuring water supplies and resource protection in the future for its members. Our approach includes a comprehensive, targeted outreach and facilitated process that will give participants this knowledge of water resources and active participation in and ultimate ownership of the final RWSP product.

WRA has also been involved the majority of the water supply planning efforts initiated by the Authority since 2004 and is keenly aware of both the issues facing and opportunities available to the Authority in its mission of balancing water supply development with water resource and environmental protection for its members. WRA is teaming with GIS, Associates (GISA) on this project. GISA has been the leader in Florida with respect to the science of demographics, population projections and water demand estimates.

7978 Cooper Creek Boulevard
University Park, Florida 34201
Phone: 941-275-9721

4260 W. Linebaugh Avenue
Tampa, Florida 33624
Phone: 813-265-3130

2401 First Street, Suite 201
Ft. Myers, Florida 33901
Phone: 239-333-2004

www.wraengineering.com

They are associated with the University of Florida Bureau of Economic and Business Research and are relied upon to provide Florida's Water Management Districts updated population projections for their planning analyses. Having this expertise on our Project Team will allow us to "hit the ground running" and further add to the credibility of our population and water demand forecasts. GISA will add credibility to the process and will be an active member of our outreach program. This will ensure that Authority members understand how these projections were developed and what their future demands entail.

Our approach is not to rest on our past successes but continue to bring the WRWSA value added service and a creative "out-of-the-box" approach with respect to water supply planning services described in the Project Approach section of this submittal. The following are highlights:

- Facilitation – *Experienced public facilitators; RWSP update used as an educational opportunity/tool for stakeholders; electronic project management system; Project Outreach Program.*
- Population and Water Demand Estimates and Projections – *Credibility with GISA as a Project Team member; close coordination with Authority members; impacts of compliance per capita rates & WUP AWS conditions; and potential demand increases from significant projects in the area.*
- Conservation and Reuse Strategies – *Alliance for Water Efficiency Water Conservation Tracking Tool; quantification and coat effectiveness of water savings; potential regionalization of reclaimed water; translating water demand reduction from non-potable users into additional potable water for Authority members.*
- Traditional and Alternative Water Source Availability – *Analysis of updated regional & permitting GW models; GW modeling; SW flow analyses; comparison of impacts to existing MFLs and the use of proxy MFLs where warranted.*
- Identification of Water Supply Projects and Infrastructure – *Comprehensive review of formally identified projects; close attention to phasing projects to mirror demand; a focus on potential costs and impacts to rates; evaluate newly proposed projects; and review of changing land use and resulting water demands to support rising public supply needs.*
- Governance, Funding for Regional Water Supply Opportunities – *Development of a "requirements template" for regional & sub-regional projects; and formulation of the rationale & advocacy to change SWFWMD's lack of financial and regulatory support with respect to regional GW development in the Northern Planning Region.*

The WRA team looks forward to continuing service with the Authority on this project and implementing the strategies outlined. WRA will bring continuity, consistency and a known work effort to this planning process. We will be happy to answer any questions you may have regarding our response or provide you and the selection committee any additional information that you require.

Sincerely,

Peter G. Hubbell
Principal

1. SOQ Requirements

SOQ Requirements

1. Legal name, address, phone number and email of Consultant;
   Water Resource Associates, LLC dba (WRA)
   4260 W. Linebaugh Avenue
   Tampa, Florida 33624
   813-265-3130
   phubbell@wraengineering.com

2. Principal location(s) of Consultant;

   Tampa, Florida

3. Legal form of Company, i.e., partnership, corporation, joint venture (if joint venture, identify the members and provide all information required under this section);

   Partnership

4. Identification and outline of qualifications and professional experience of Consultant's 'Project Officer' who is to serve as point of contact for the project;

   Mr. Mazur is a Senior Project Manager at WRA with over 19 years of multidisciplinary experience in the water resources arena; including Planning Director and Bureau Chief over the Operations and Land Management for the SWFWMD Division Director for Hillsborough County Development Services; and Stormwater Section Manager for the County's Public Works Department. Mr. Mazur has unique expertise in public outreach and meeting facilitation having played the lead role in the planning and implementation of collaborative public/private projects at SWFWMD and Hillsborough County. Mr. Mazur has significant experience resolving complex water resource related problems including alternatives planning and evaluation, cost projections and project execution. He has extensive experience managing parallel projects comprised of diverse, multi-disciplinary teams with the outcomes achieving exceptional results.

   He holds degrees from Florida State and the University of South Florida in Political Science and Civil Engineering, respectively, and is a licensed professional engineer and certified planner (AICP).

9. Indicate if Consultant now represents any of the Authority's member governments in any way;

   WRA current representation: None. Past Representation: Marion County

10. Indicate if Consultant is currently involved in any litigation against any of the Authority member governments, either directly or retained for testimony and expertise on behalf of any other entity in litigation against the Authority or any of its Members;

    WRA is neither involved in litigation against any Authority member governments or is either directly or retained for testimony and expertise on behalf of any other entity in litigation against the Authority or any of its Members.

2. Project Personnel

Principal in Charge - QA/QC
Peter Hubbell

Project Officer
Roy Mazur, P.E., AICP

Facilitation & Outreach
Peter Hubbell
Dani Clooney, GIS

Population & Water Demands
Rich Doty, GIS Associates
Mike Alfieri, P.G.
Dani Clooney, GIS

Water Conservation & Reuse
Roy Mazur, P.E., AICP
Matt Miller, PWS
Dani Clooney, GIS

SW / GW/Alternative Source Availability
Mike Alfieri, P.G.
Dom Tufariello, P.E.
Matt Miller, PWS
Dani Clooney, GIS

Water Supply Project Design
Roy Mazur, P.E., AICP
Mike Alfieri, P.G.
Matt Miller, PWS
Dom Tufariello P.E
Dani Clooney, GIS

Regional Governance & Funding
Peter Hubbell

GIS Associates, Inc.

"Ensuring Water Supplies for the Future of the Region"

WRA

RELEVANT STAFF EXPERIENCE MATRIX

		Demand Projections			Conservation					SW/GW Availability & Permitting					Project Feasibilty Analysis & Design					Regional Project Development			Project Managment & Facilitation					
		Population Projections	Potable Water Demand	Non-Potable Water Demand	Technical Evaluation	Water Saving & Quantification	Cost Effectiveness Evaluation	Reclaimed Water	Stormwater	Groundwater Modeling	SW Modeling	MFLs	Environmental Systems	Consumptive Use Permitting	Conceptual Design	Cost Estimating	Alternatives Evaluation	Treatment Systems	Value Engineering	Multi- Utility Regional Framework	Governance Agreements	Florida Water Law	Project Manager Role	Consortium Management	Public Facilitation	Mediation	Consensus Building	Board Presentations
WRA																												
Peter Hubbell	Principal-in-Charge	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●		●	●	●	●	●	●	●	●	●
Roy Mazur, P.E., AICP	Senior Project Officer		●	●	●	●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●		●	●
Rich Doty (GIS Associates, LLC)	Demographer	●	●	●																			●					●
Mike Alfieri, P.G.	Principal Hydrogeologist		●	●	●			●		●	●	●		●	●	●	●			●			●		●			●
Matt Miller, PWS	Environmental Manager				●							●	●	●	●													●
Dom Turifiello, P.E.	Senior Professional Engineer								●		●	●		●	●	●	●	●	●									●
Danielle Kaminski	GIS Analyst	●	●	●	●							●	●	●	●					●								●

* Detailed Personnel Resumes Located Within Appendix A

3. Relevant Project Experience

RELEVANT PROJECT EXPERIENCE MATRIX

RELEVANT WATER RESOURCE PROJECTS	Water Demands				Conservation						Surfacewater/ Groundwater Availability					Project Design & Feasibility						Regional Project Development			Facilitation				
	Population Projections	Potable Water Demand	Non-potable Water Demand	Spatial Demand Determination	Project Identification	Technical Evaluation	Water Saving & Quantification	Cost Effectiveness Evaluation	Reclaimed Water	Stormwater	Groundwater Modeling	Surface Water Modeling	Minimum Flows and Levels	Environmental Systems	Permitting	Conceptual Design	Cost Estimating	Alternatives Evaluation	Treatment Systems	Value Engineering	Hydrogeology	WRWSA Regional Framework	Governance Agreements	Florida Water Law	Meeting Development	Public Facilitation	Mediation	Consensus Building	Board Presentations
National Environmental Dialogue on Pork Production & Water Resource Advisor to USEPA-ACT/ACF Water Allocation Formula Negotiations *US Environmental Protection Agency, Nationwide*																									•	•	•	•	•
Rainbow Springs Contamination Study *Southwest Florida Water Management District, Brooksville, Florida*											•		•	•							•				•				•
South Lake Regional Water Initiative-Clermont Chain of Lakes Watershed Plan *Tavares, Florida*												•	•	•	•	•		•	•	•	•				•				•
District-Wide MFLs Program & Chiefland/Fanning Springs/Trenton Water Supply Plan *Suwannee River Water Management District, Live Oak Florida*											•	•	•	•	•	•	•	•	•	•	•		•	•	•	•		•	•
City of Groveland Consumptive Use Permitting *City of Groveland, Florida*	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Lake County Water Supply Plan *Lake County Water Alliance, Leesburg, Florida*	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•		•			•	•
South Lake Regional Water Initiative-20 Year Water Supply Plan *South Lake Regional Water Initiative, Clermont, Florida*	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•		•			•	•
****CFWI Small Area Population Estimates and Projections** *Central Florida Water Inititative & Southwest Florida Water Management District, Brooksville, Florida*	•			•										•	•								•	•	•			•	
****Southwest Florida Water Management District (SWFWMD) Small Area Population Forecasting** *Southwest Florida Water Management District, Brooksville, Florida*	•			•										•	•								•	•	•			•	
Northern District Modeling and Local Community Technical Support & Marion County Water Conservation and Reclaimed Water Initiative *Withlacoochee Regional Water Supply Authority, Lecanto, Florida*					•	•		•	•		•		•	•		•	•	•		•	•			•	•	•		•		
WRWSA Regional Framework Initiative & WRWSA General Services Contract *Withlacoochee Regional Water Supply Authority, Lecanto, Florida*					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•
Withlacoochee Regional Water Supply Plan Update 2005 & WRWSA Phase II – Detailed Water Supply Feasibility Analyses *Withlacoochee Regional Water Supply Authority, Lecanto, Florida*	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•			•	•

NOTE:
****: GIS & Associates Project**

National Environmental Dialogue on Pork Production
USEPA

Title and Location *(City and State)*	Year Completed	
National Environmental Dialogue on Pork Production - Nationally	**Professional** 1999-2000	**Construction** NA

PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
America's Clean Water Foundation	Roberta Savage	202-898-0908

BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Project Overview

Water Resource Associates provided program design, development and facilitation services for the establishment of best management practices and public participation in the controversy surrounding concentrated animal feeding operations (CAFO) in the pork production industry nationally. The process developed consensus on regulatory and non-regulatory strategies for establishment of alternative strategies for environmental protection with stakeholders in the CAFO debate. The Dialogue was convened by America's Clean Water Foundation and sponsored by the USEPA, USDA and the National Pork Producers Council. Dialogue recommendations were incorporated into the USEPA standards for CAFOs.

Water Resource Advisor to USEPA-ACT/ACF
Water Allocation Formula Negotiations

Title and Location *(City and State)*	Year Completed	
Water Resource Advisor to USEPA-ACT/ACF Water Allocation Formula Negotiations - Alabama, Florida and Georgia	**Professional** 1999-2000	**Construction** NA

PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
USEPA Region 4	Rebecca Hendrix	404-562-8342

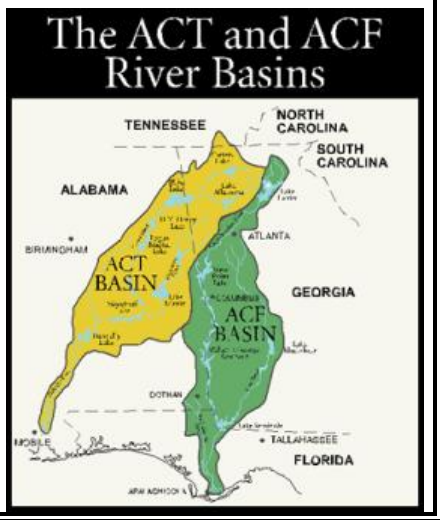
BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Project Overview

The Tri-State Compact on Water Resources between Florida, Georgia and Alabama has been discussed, negotiated and litigated for over the past 20-years. The allocation of water throughout the major river basins between the three states has been contentious with the Federal government responsible for the control of water from federally owned and operated reservoirs to upstream and downstream water users.

Water Resource Associates assisted the USEPA in formulating and reviewing proposed water allocation formulas and created a basin plan format for the Alabama / Coosa / Talapoosa and Apalachicola / Chattahoochee / Flint River Basins.

Facilitated negotiations were held and different scenarios for settling the dispute were generated by WRA.



Groundwater Quality Source Evaluation for the Rainbow Springs Group (2017) Marion County, Florida

Title and Location *(City and State)*	Year Completed	
Groundwater Quality Source Evaluation for the Rainbow Springs Group Marion County, Florida	Professional 2017	Construction NA

PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
Southwest Florida Water Management District	Barbara Nordheim-Shelt	352-796-7211

BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Project Overview

There are more than one hundred-fifty springs within the Southwest Florida Water Management District (District), all of which have become threatened in varying degrees by anthropogenic activities and other factors. Of these stresses, increased nitrate concentrations in spring discharge paramount. WRA presented the District with a new innovative approach to identification of nitrate sources and related recharge within a springshed.

Traditional approaches to springs protection and restoration have focused on areas proximal to the spring or spring group (Figure 1). Use of proximity to a spring is reasonable in many situations, but it assumes that the sources(s) of nutrients and associated recharge are spatially and uniformly widespread and, because of dilution and dispersion of water distal to the spring, only those sources nearest the spring are of concern.

WRA devised a "surgical" approach to hydrogeologic evaluation and establishment of site-specific, nutrient-reduction target areas. This approach enhances the solution of water-quality problems by streamlining a spatially focused, cost-effective means for spring protection and source identification.

A pilot program evaluation method completed for the District increases in complexity with each step of the evaluation; however, the results linked aqueous geochemical statistics to potential karst features and land uses during the three 10-year time frames evaluated. Once potentially relatable karst features were identified, statistical analyses of District water-quality data were completed to cluster the water-quality data into process-related factors. Site-specific loadings of water-quality data to process-related factors can be mapped to identify potential sites of interest within a springshed. The statistical approach included: geochemical fingerprinting by pattern recognition and analysis; principal component analyses (PCA); and factor analyses (FA; example presented on Figure 2). These geostatistical/geochemical analyses along with the karst hydrogeological evaluation allowed for the identification of potential "hot spots".

Three factors which represent different chemical processes were identified and their relative areal impact determined. These processes are: (1) regional dissolution of the aquifer limestone and/or dolostone matrices and recharge of meteoric water; (2) recharge from local, urban, and agricultural fertilizer runoff; and (3) recharge from local, urban, and agricultural soil amendment runoff. The results of this pilot program can be used develop strategies for cost-effective improvement of the quantity and quality of spring systems across the State of Florida.

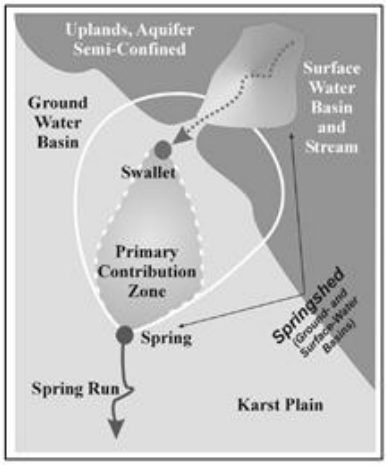


Figure 1. Current hypothetical spring protection zone ("Primary Contribution Zone") used by the State Water Management Districts (WMDs) and the Department of Environmental Protection (DEP) based on proximity to a spring. Figure from Scott et al. (2004).

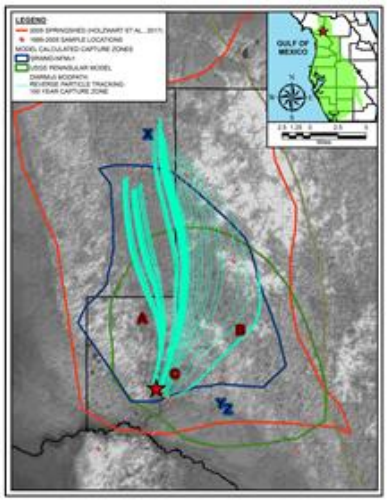


Figure 2. Example of the 1995-2005 Factor 3 elevated and lowered factor score zone (nitrate+nitrite signal and iron/ orthophosphate signal) locations and simulated capture zones. A: highest factor score. B: second highest factor score. C: third highest factor score. Z: lowest factor score. Y: second lowest factor score. X: third lowest factor score. Red Star: Rainbow Springs Group location.

South Lake Regional Water Initiative- Watershed Management Plan
Lake County, Florida

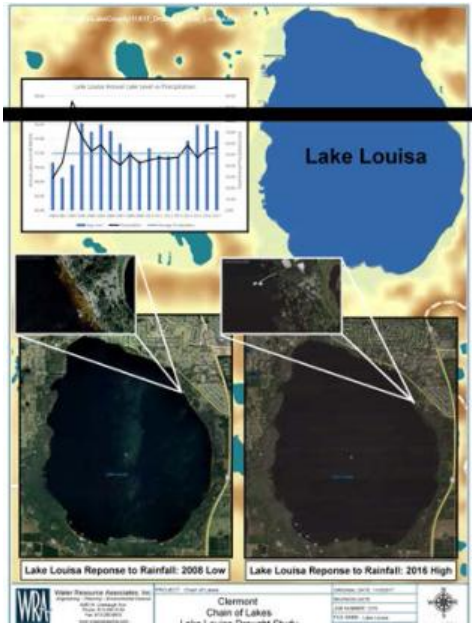
Title and Location *(City and State)*	Year Completed	
South Lake Regional Water Supply Initiative- Clermont Chain of Lakes Watershed Management Plan, Lake County, Florida	**Professional** 2016-2017	**Construction** NA

PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
SLRWI Members	Nick McRay- Lake County	352-253-9080

BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Project Overview



The South Lake Regional Water Supply Initiative (SLRWI) was formed as a group including the Cities of Clermont, Groveland, Monforte and Mascotte. Minneola and the private utility Lake Utilities Services Inc. (LUSI).

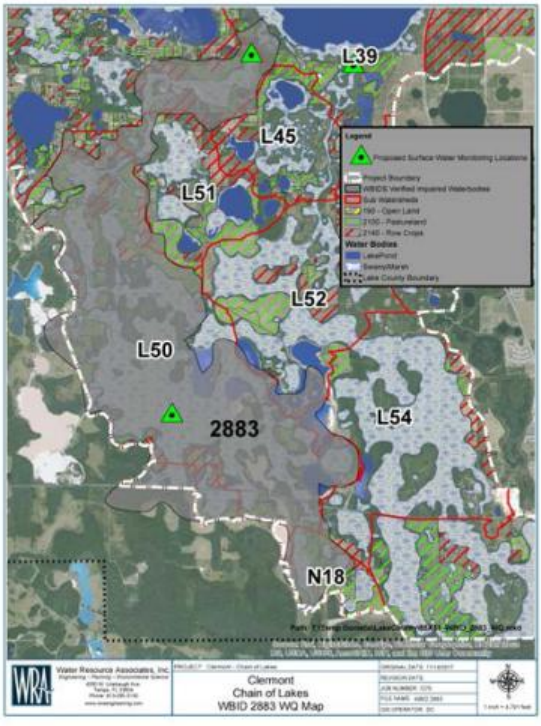
WRA was selected in competitive proposals to deveop a watershed managment plan for the Clermont Chain of Lakes watershed. The watershed is approximately 280 square miles in size and encompassed portions of both Lake and Polk Counties.

The objectives of the watershed plan were the following:

1. Develop a watershed surface water model in ICPR4 to determine the surface water elevations for the mean annual, 25 year and 100 year floodplains.
2. Determine areas where water quality degradation was occurring or was projected to occur based on future land use changes
3. Determine the reason why the Clermont Chain of Lakes were periodically experiencing lowered lake elevations
4. Recommend solutions to flooding and water quality issues identified by the above evaluations

WRA utilized the ewly developed ICPR4 Model to model the flood profiles for the watershed. This was the first time this new model had been used for a large, regional watershed. WRA conducted a comprehensive field data collection effort to collect significant structures, channel dimensions, potential obstructions, as-built construction data, etc for the model input.

Lake water quality information was compiled to identify problem areas and then projections were completed using GIS applications for projected water runoff quality.



Final Deliverables

1. Flood profiles for the mean annual, 25 yr and 100 year floodplains
2. Detailed evaluation showing lake level fluctuations were the result of rainfall
3. Water quality degradation sources identification and monitoring plan
4. Water quality management alternatives
5. Management matrix for all 36 sub basins ranked by priority

District-Wide MFL's Program(2004-2009)
Chiefland/Fanning Springs/Trenton Water Supply Plan (2009)

Title and Location *(City and State)*	Year Completed	
District-Wide MFL's Program, Florida Chiefland/Fanning Springs/Trenton Water Supply Plan, Florida	**Professional** 2004-2009, 2009	**Construction** NA

PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
Suwannee River Water Management District	John Goode, Chief Professional Engineer	386-362-1001

BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

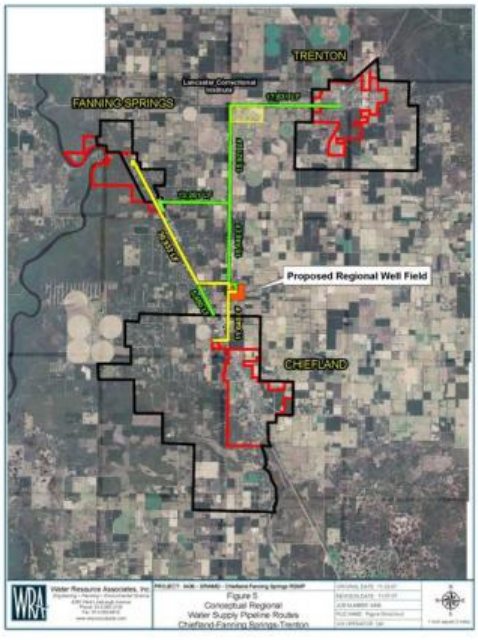
Project Overviews

WRA was selected by the Suwannee River Water Management District (SRWMD) to develop the SRWMD District-Wide MFL Program (2004–2009). This Program included over 30 springs, and 14 major river systems including the Suwannee River.

The project scope of work involved data compilation and review, data analysis, MFL criteria development and provision of recommended MFL flow regime that would satisfy all of the water resource and human values required by Section 62-40.473, *FAC*.

Additionally, WRA has developed a data collection program, withdrawal impact prediction models and prepared an MFL implementation plan for the District. Issue specific investigations for this project included water quality impacts of low flows; impacts to significant habitat; and recreation and water supply. Additionally, WRA has developed a comprehensive MODFLOW groundwater model to provide a permitting evaluation tool for the District that incorporates the distinctive SRWMD Karst geology. WRA provided an extensive public outreach program to advise interested parties about the requirements for an MFL and the implications it will have on existing and future permit holders.

WRA was retained by the SRWMD to develop the Chiefland/Fanning Springs/Trenton Water Supply Plan (2009). Fanning Springs initiated discussions with the District and City of Chiefland to determine if there was interest in using SRWMD property to serve both Chiefland and Fanning Springs. During the discussions the City of Trenton was invited to participate in the process to explore the development of a regional water supply system. These municipal governments agreed to collaborate to assess the feasibility of developing a regional water supply system to expand their water supply systems to meet future demands, ensure system reliability, and as a potential emergency back-up system. Further, the communities developed "Points of Agreement") that outlined the importance of a regional approach and established a framework to achieve a successful approach to implement a regional water supply system. WRA's plan included:



- Coordination with local governments and District staff;
- Coordinating and facilitating workshops with local governments;
- Evaluation of existing water supply facilities;
- Wellfield design and costing;
- Development of the Conceptual Regional Facilities Plan;
- Identification of existing and future water resources data and demands;
- Determination of future data requirements; and
- Identification of regulatory requirements to implement the Plan.

This effort was culminated into the development of the Nature Coast Regional Water Supply Authority.

City of Groveland CUPs
Lake County, Florida

Title and Location *(City and State)*	Year Completed	
	Professional	Construction
City of Groveland CUPs, Lake County, Florida	2016-2018	NA

PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
City of Groveland	James Huish	352-429-0227

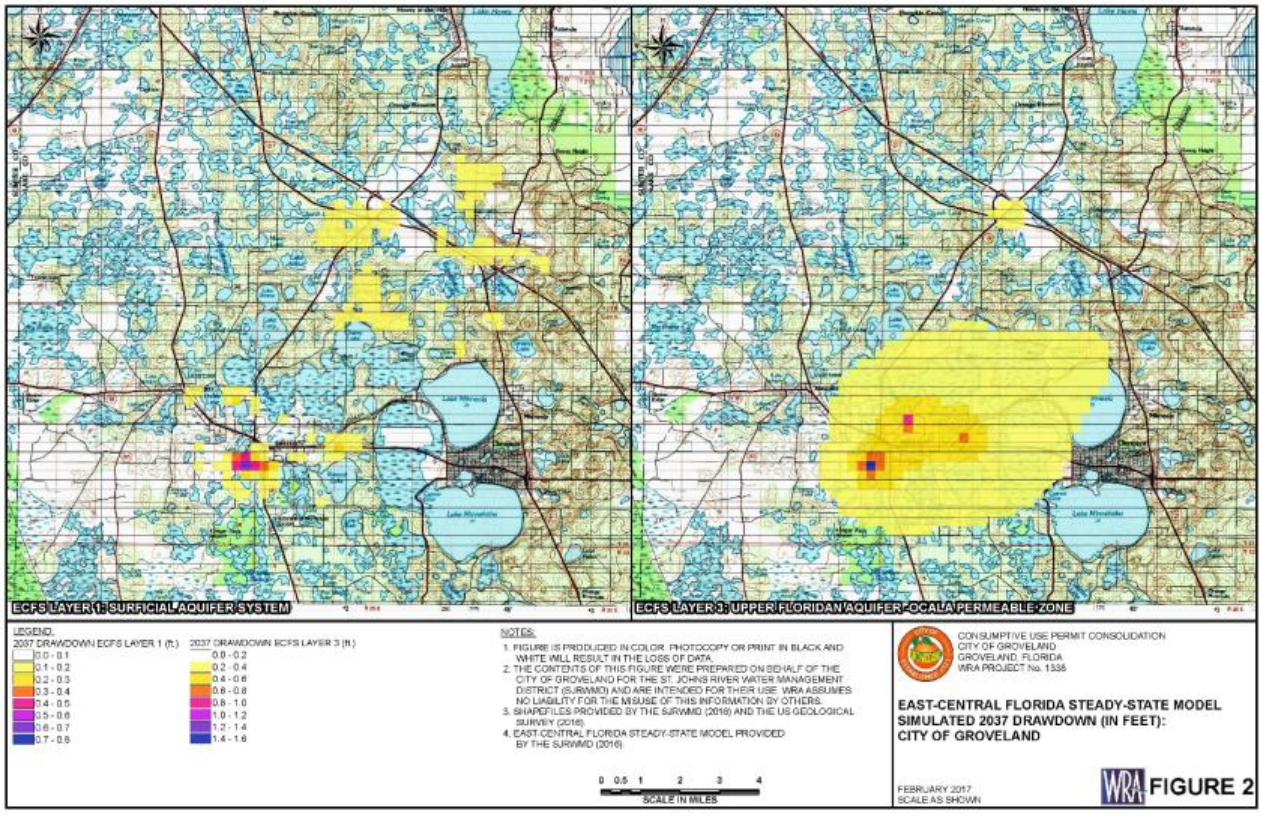
BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Project Overview

Following WRA's 2016 completion of the South Lake Regional Water Initiative (SLRWI) 20 year Water Supply Plan, SLRWI member City of Groveland contracted WRA to assist them in modifying the CUPs to address their need for additional water supply, mitigation of MFL waterbodies and conservation plans

WRA worked with the District to come to the agreement that the City would remain below District's per capita goal of 150 gallons per capita day (gpcd). WRA evaluated the projected City permitted allocation with the District's East-Central Florida Model Steady-State (ECFS), which was developed and based on the East-Central Florida Model Transient (ECFT) utilized in the Central Florida Water Initiative (CFWI). This modeling evaluation incorporated the use of the lower Floridan aquifer (LFA), a non-traditional water source, to supply water to the Villa City development.

Based on the modeling completed by WRA and approved by the District, impacts to existing legal uses and environmental receptors, specifically MFLs, would be minimal based on the ECFS model. To offset regional MFL impacts, WRA also simulated a remedial solution whereby surface water will be moved from one location within the City limits to recharge the Apshawa Lakes. Based on the ECFS model results, this solution should create approximately 0.15-ft. of rebound in the upper Floridan aquifer (UFA) beneath the Apshawa Lakes, which is beneficial to many existing legal uses within the CFWI. The City's consolidated CUP will be issued by the District in February 2018 with a permitted increase to 2.5 MGD for household, commercial/industrial, landscape irrigation, water utility, and unaccounted type uses utilizing the Lower Floridan Aquifer and significant conservation.



Lake County Water Supply Plan
Lake County Water Alliance

Title and Location *(City and State)*	Year Completed	
Lake County Water Supply Plan, Lake County, Florida	Professional Apr 2006-Sep 2007	Construction NA

PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
Lake County Water Alliance	Ray Sharp, Environmental Services, City of Leesburg	352-728-9835

BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Project Overview

The Lake County Water Alliance (Alliance) developed the Lake County Water Supply Plan (Plan) for its member governments. The Alliance is constituted of the following jurisdictions: the Cities of Clermont, Eustis, Fruitland Park, Groveland, Howey-In-The-Hills, Lady Lake, Leesburg, Mascotte, Minneola, Montverde, Mount Dora, Tavares and Umatilla.

The Plan addressed the following major objectives set forth by the Alliance:

1. Estimating the sustainable groundwater yield;
2. Maximizing the use of Alliance member water resources;
3. Avoidance of unacceptable environmental impacts;
4. Identification of cost-effective water supply development projects; and
5. Identification of new traditional or alternative water supply development projects that will not conflict with other local government users.

The final executive report presented an overview of the analyses, findings, conclusions and recommendations from the five (5) Technical Memorandums. The following Phases and tasks were incorporated into the Technical Memorandums.

Phase 1:

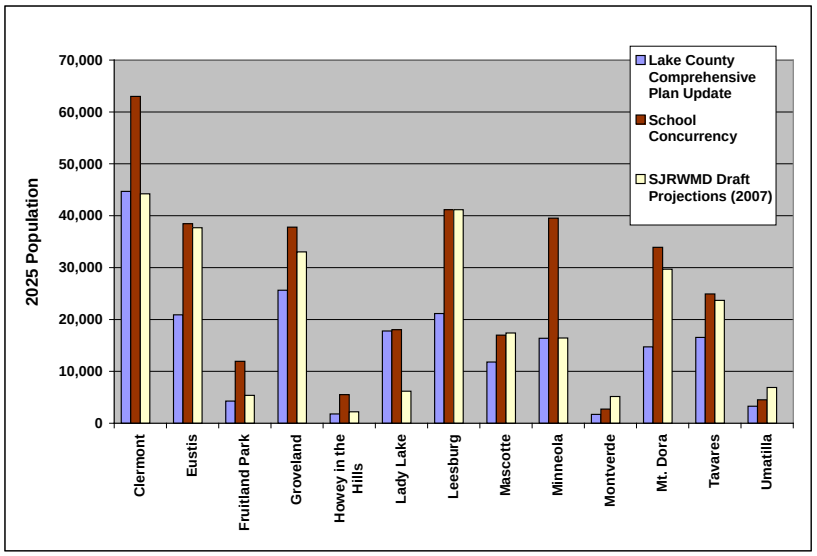
- Project initiation and project management/administration throughout the duration of the project.
- Establishment and use of a Project Management System

Phase 2:

- Assessment and collection of consumptive use permit (CUP) data
- Characterization of current water resources
- Analysis of various population and demand projections
- GIS mapping

Phase 3:

- Identification of alternative water supply development projects,
- Review of existing regional monitoring programs
- Final reporting.



South Lake Regional Water Initiative- 20 Year Water Supply Plan
Lake County, Florida

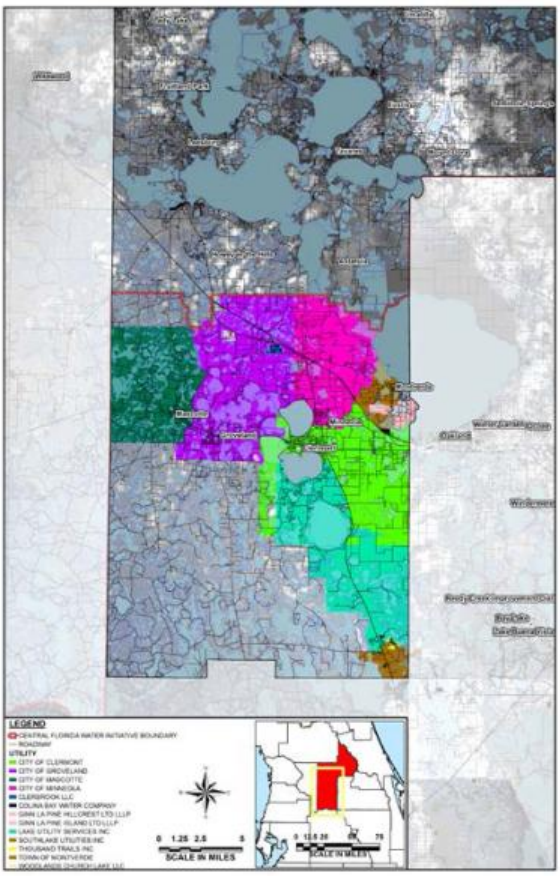
Title and Location *(City and State)*	Year Completed	
South Lake Regional Water Supply Initiative- (SLRWI) 20 Year Water Supply Plan, Lake County, Florida	**Professional** 2015-2016	**Construction** NA

PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
SLRWI Members	James Kinzler- City of Clermont	352-241-7356

BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

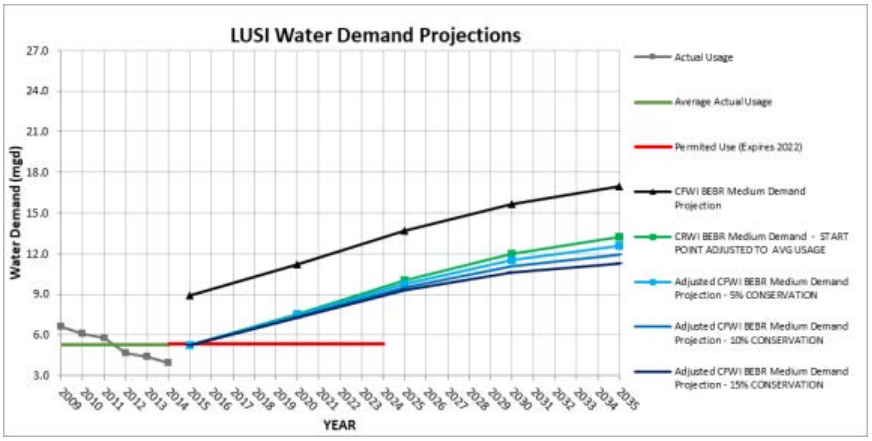
Project Overview

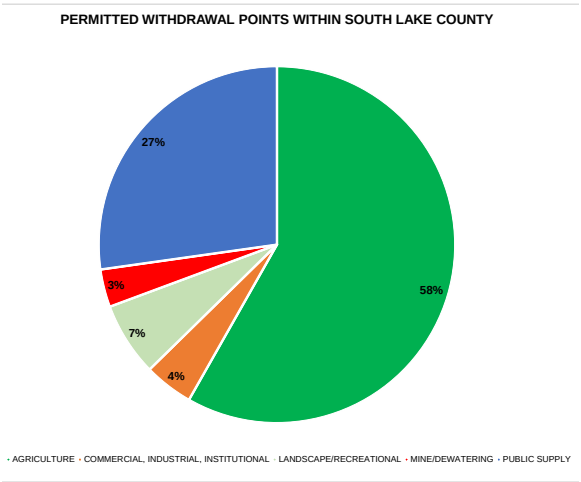


The Southlake Regional Water Supply Initiative was formed as a group including the Cities of Clermont, Groveland, Monforte and Mascotte. Minneola and the private utility Lake Utilities Services Inc. (LUSI).
WRA was selected in competitive proposals to conduct a 20 year water supply plan for all members and the region as a whole. The following tasks were completed.

1. Demand estimates
2. New water source evaluations
3. Current and projected MFL impacts
4. 20 year water supply sources ranked by:
   - Cost
   - Environmental Considerations
   - Permittability
   - Public Acceptance
   - Timing
5. MFL mitigation alternatives
6. Funding options
7. Continuing SLRWI Goverance alternatives

The Plan was finalized on budget and two months ahead of schedule.





CFWI Small Area Population Estimates and Projections
Gainesville, Florida

Title and Location *(City and State)*	Year Completed	
Central Florida Water Initiative (CFWI) Small Area Population Estimates and Projections Project, Gainesville, Florida	**Professional** 2017	**Construction** NA

PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
CFWI Steering Committee/SWFWMD	Kevin Wills (SWFWMD)	352-796-7211, Ext. 4417

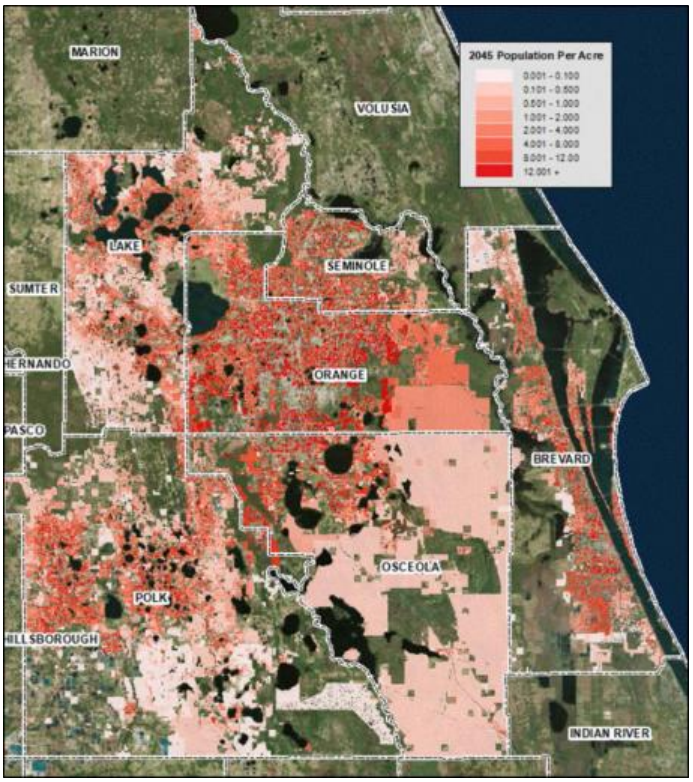
BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

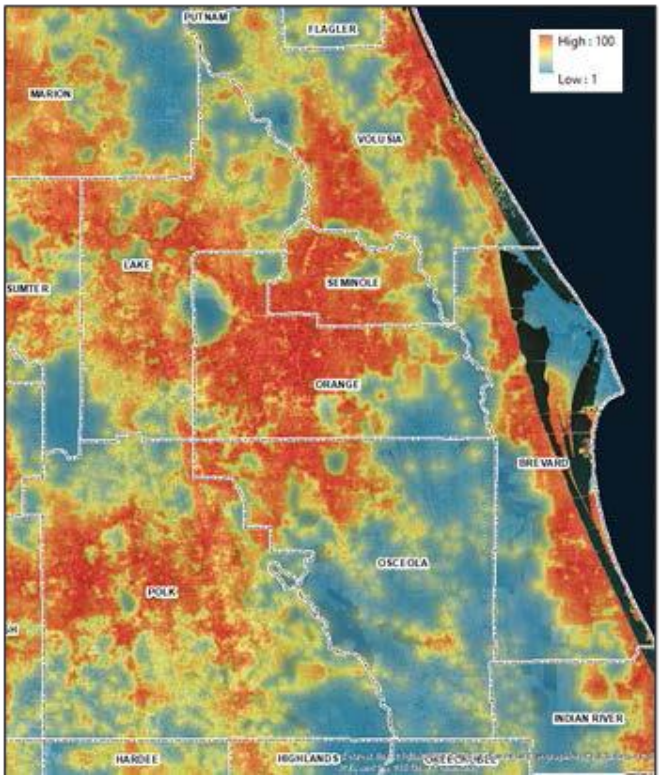
Project Overview

Using GISA's Small-area Population Projection Model, developed population estimates (2010-2016) and projections (2020-2045) at the property parcel level for the six counties (including Brevard) within the CFWI Planning Area. The Model projects future population in five-year increments to the year 2045. The GIS-based model incorporates:

- Population, average household size and average occupancy from the 1990, 2000 and 2010 decennial censuses, and 2011-2016 population, average household size and average occupancy from BEBR
- Future land use classification and unit densities from local government future land use maps
- Surface water and wetlands
- Conservation lands and other areas for which development is restricted
- Planned development boundaries and approved residential units
- Redevelopment area boundaries and net change in residential units (where available)
- Water utility, county and water management district boundaries needed for summarizing the results

Growth trends from historical population estimates were constrained and guided using the geospatial data, and total growth was calibrated to BEBR's county level forecasts. Property parcel level results were summarized by potable water utility service areas. Project cost was $120,000.





SWFWMD Small Area Population Forecasting
Gainesville, Florida

Title and Location *(City and State)*	Year Completed	
Southwest Florida Water Management District (SWFWMD) Small Area Population Forecasting, Gainesville, Florida	**Professional** 2017	**Construction** NA

PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
SWFWMD	Corey Denninger	352-796-7211, Ext. 4412

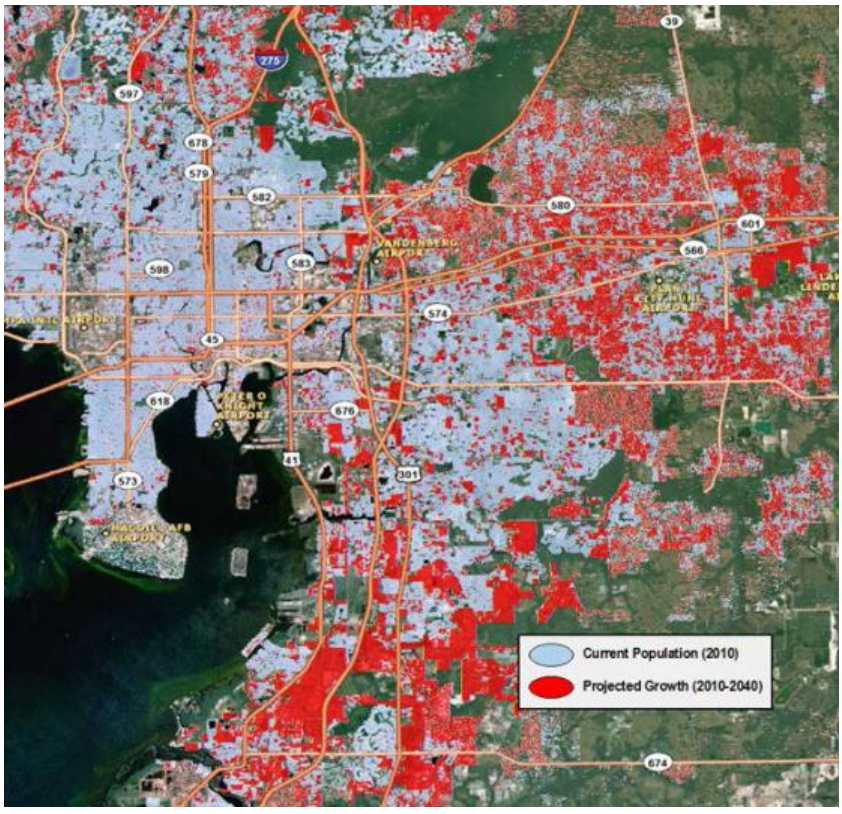
BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

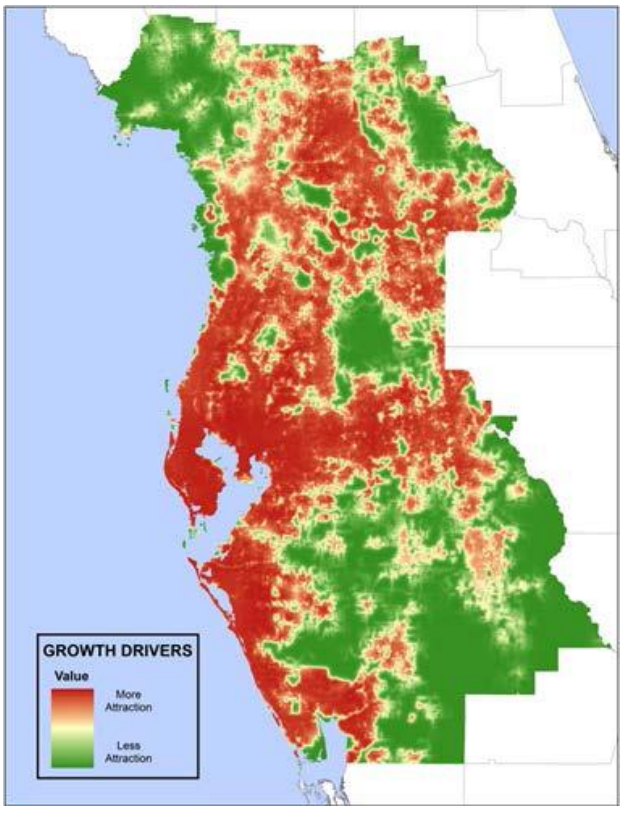
Project Overview

Using GISA's Small-area Population Projection Model, developed population estimates (2016) and projections (2020-2045) at the property parcel level for a 17-county area (including Lee). The GIS-based model incorporates:

- Population, average household size and average occupancy from the 1990, 2000 and 2010 decennial censuses, and 2016 population, average household size and average occupancy from BEBR
- Future land use classification and unit densities from local government future land use maps
- Surface water and wetlands
- Conservation lands and other areas for which development is restricted
- Planned development boundaries and approved residential units
- Redevelopment area boundaries and net change in residential units (where available)
- Water utility, county and water management district boundaries needed for summarizing the results

In addition to permanent population, projections of peak seasonal, functional seasonal, tourist, and net commuter populations were developed. Project cost was $117,000.





ND Modeling and Local Community Technical Support
Marion County Water Conservation & Reclaimed Water Initiative

Title and Location *(City and State)*	Year Completed	
ND Modeling and Local Community Technical Support (2008) Marion County Water Conservation & Reclaimed Water Initiative (2012)	**Professional** 2008 & 2012	**Construction** NA

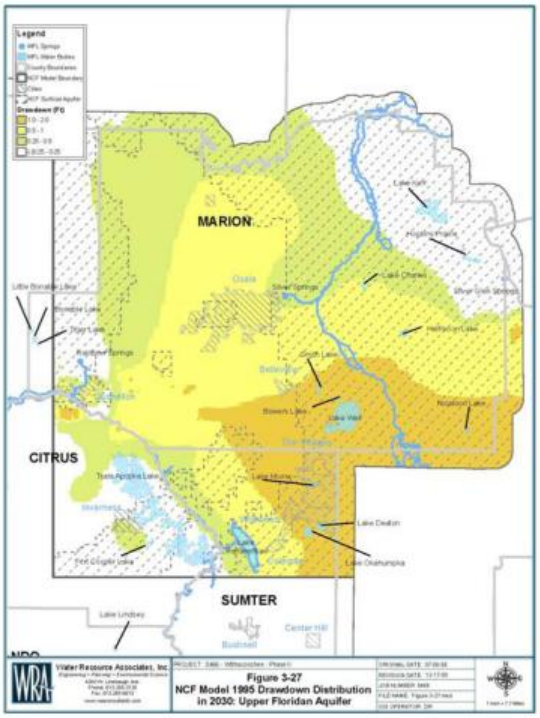
PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
Withlacoochee Regional Water Supply Authority (WRWSA)	Richard Owen	352-527-5795

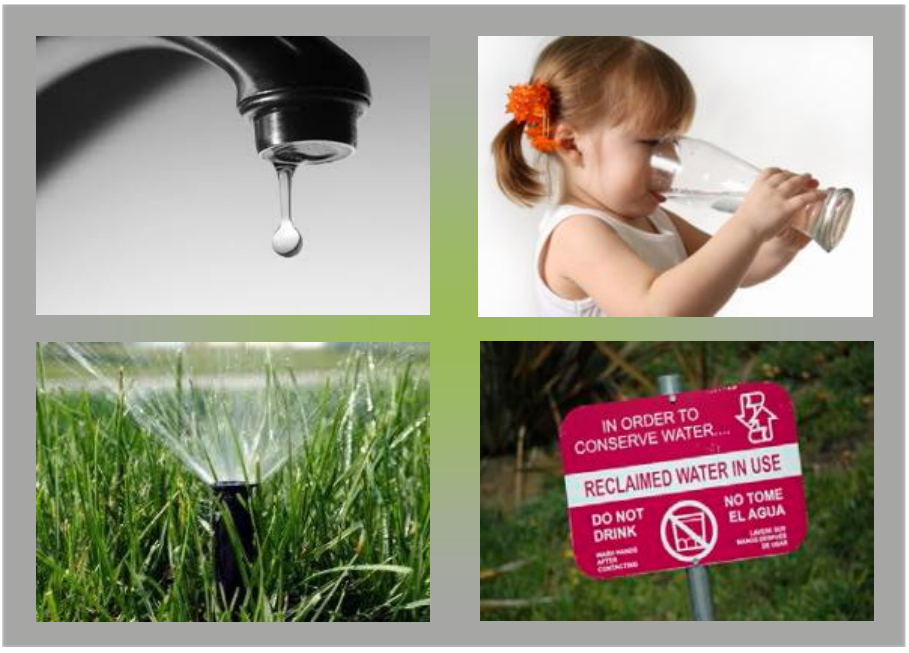
BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Project Overviews

Utilizing SWFWMD's "Northern District Model" and other appropriate tools, the WRA assisted the Authority by providing ND Modeling and Local Community Technical Support (2008). This effort was to determine a planning level estimate of how much additional groundwater could be withdrawn (allocated) in order to devise a range of management schemes to minimize impacts on adopted flows or levels. WRA interpreted these results for local communities otherwise lacking in technical support so that they could optimize existing wellfield expansions and the location of future wellfields without causing an MFL violations, to plan for appropriate capital improvements and densities and intensities of development set forth in local comprehensive plans, and to provide meaningful feed-back to the District. Through this mechanism, the Authority can further refine the Master Regional Water Supply Plan based upon established Minimum Flows and Levels as well as evolving regional and sub-regional water supply strategies.



The Marion County Water Conservation and Reclaimed Water Initiative (2012) was developed by WRA to support water demand reduction in the eastern portion of Marion County. WRA analyzed water conservation and reclaimed water opportunities for Marion County, FL and its incorporated municipalities. This included an inventory of existing programs and reclaimed projects. Based on population projections potential water savings and impact to per capita usage utilizing additional water conservation and reclaimed water initiatives was analyzed. The effort was to assist those communities within the St. Johns River Water Management District portion of the WRWSA with water demand reduction at a par with what is required by the Southwest Florida Water Management District due to their compliance per capita requirements.



WRWSA Regional Framework Initiative
WRWSA General Services Contract

Title and Location *(City and State)*	Year Completed	
	Professional	Construction
Regional Framework Initiative (2011) General Services Contract (2011–Present)	2011, 2011-Present	NA

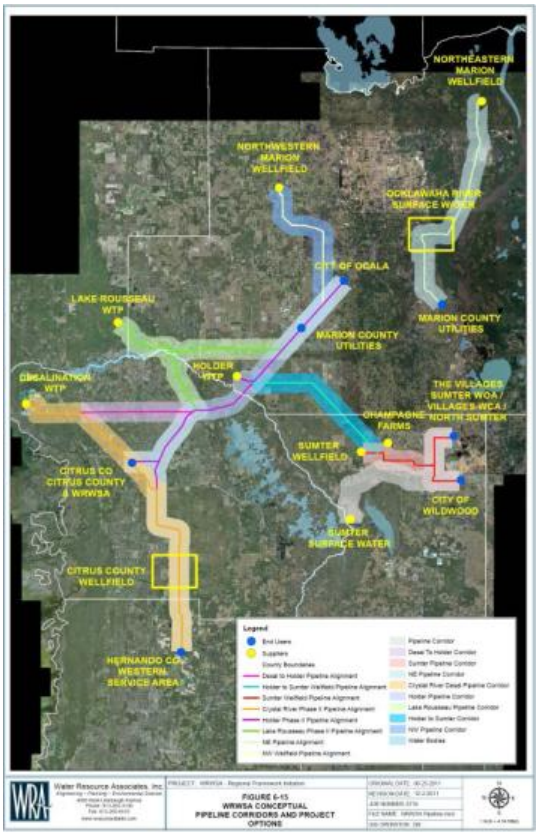
PROJECT OWNER'S INFORMATION

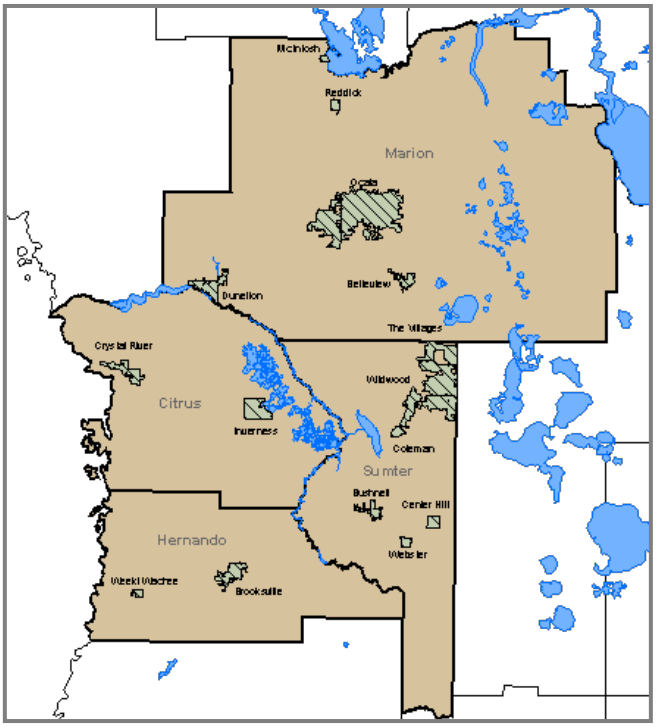
Project Owner	Point of Contact	POC Telephone Number
Withlacoochee Regional Water Supply Authority (WRWSA)	Richard Owen	352-527-5795

BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Project Overviews

The WRWSA Regional Framework Initiative (2011), was a key recommendation from the Phase II report and called for the establishment of a "regional framework" for future water supply development. The framework is a plan that promotes regional and sub-regional water supply development with the objective of maximizing traditional groundwater supplies while minimizing economic and environmental impacts. It also considers alternative water supplies in the region in a manner that minimizes disruption by planning for its inevitable introduction into the region's water supply. The study contemplates AWS/traditional water supplies identified in previous planning projects and considers potential users and probable routes that "tie" together these projects with end customers. The Regional Framework is the springboard in the discussions of collaborative water supply development between WRWSA members.





WRWSA General Services Contract (2011 - Present). WRA has acted as the general services consultant for the WRWSA for the past two years. In that capacity WRA has been asked to provide technical support to the Executive Director and the WRWSA Board on a range of water management and water supply issues. This has included: issue analysis; coordination with regulatory agencies; review of proposed MFL's on water supply projects; meeting attendance on behalf of the WRWSA; facilitation of member water supply development projects; support for the CAB Wellfield; review of proposed WUPs and CUPs; analysis of proposed rules and statutes; hydrologic and hydraulic analyses; and other services requested by the Executive Director and the WRWSA Board.

Withlacoochee Regional Water Supply Plan Update
WRWSA Phase II – Detailed Water Supply Feasibility Analyses

Title and Location *(City and State)*	Year Completed	
Regional Water Supply Plan Update (2005) Phase II – Detailed Water Supply Feasibility Analyses (2007)	**Professional** 2005 & 2007	**Construction** NA

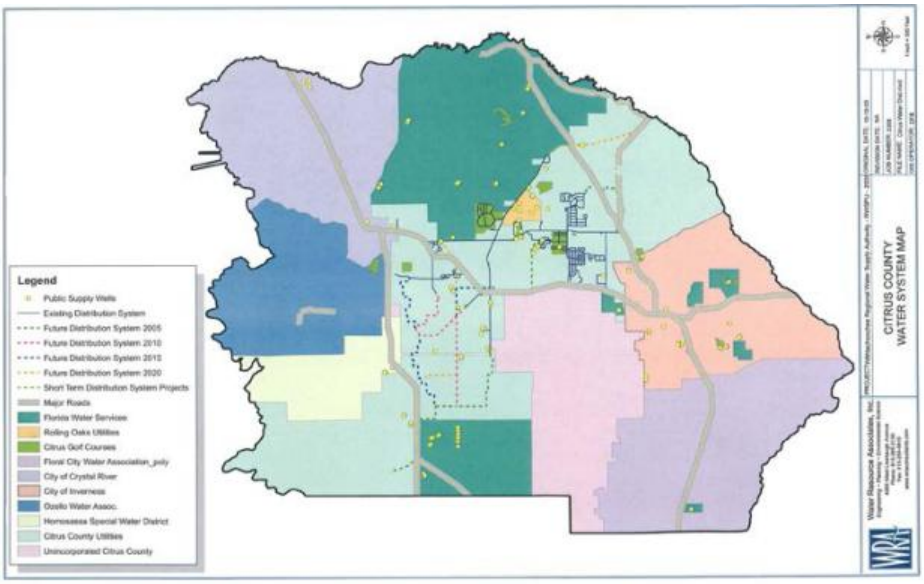
PROJECT OWNER'S INFORMATION

Project Owner	Point of Contact	POC Telephone Number
Withlacoochee Regional Water Supply Authority (WRWSA)	Richard Owen	352-527-5795

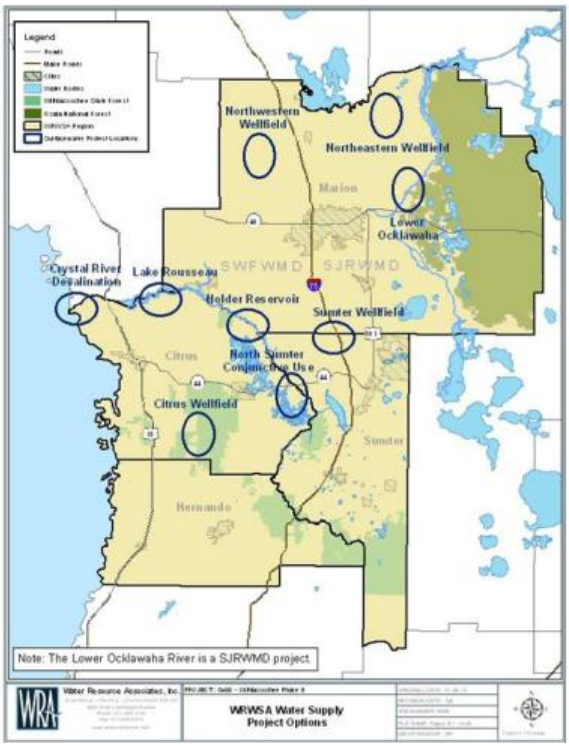
BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size, and cost)*

Project Overviews

The WRWSA Regional Water Supply Plan Update – 2005 (RWSPU) is an update to the 1996 WRWSA Regional Water Supply Master Plan. In broad terms, the WRWSA (RWSPU)-2005 provides a means for the Authority to determine both the existing and projected water demands for the region. Ultimately, these demands serve as a basis for future water supply development projects for the region as outlined in the report.



The RWSPU water demand estimates were analyzed over a planning horizon, from the year 2000 to 2025, and over a reference projection period from 2025 to 2055. The planning horizon includes a more detailed, focused and reliable forecast of water needs for the region, which helped to shape water supply development projects. This short-term demand will contribute to the capital improvement programs for local governments and the WRWSA in the near term. The reference projection time frame, though not as precise as the short-term phase, provide ranges from conservative to aggressive that will provide policy makers with information on the impact of future growth with respect to water supply services.



As part of the Phase II (2007) – Detailed Water Supply Feasibility Analyses, WRA evaluated potential water sources to assess environmental impacts, ability to permit, public perception, long-term viability of source, relative cost and time required to implement, conflicts with existing sources, ability to serve multiple users, and compatibility with current utility systems. Detailed analyses prepared during Phase II will progress in a manner largely corresponding with priority areas identified in the updated Master Regional Water Supply Plan (Phase I) as areas of the region with the highest water supply demand. Phase II described and prioritized proposed projects based on a more in-depth analysis than the previous report. This analysis included project sizing, cost-estimation, cost-benefit analyses, timing/scheduling and optimization of potential projects.

4. Goals & Objectives

Goals and Objectives

Project Goals – The primary goal of the Withlacoochee Regional Water Supply Authority (Authority) Regional Water Supply Plan Update (RWSPU) is to review, develop and report the latest water resource/water supply regulatory, technical, environmental and engineering data to assure Authority members that their water needs are adequately planned for the future. This will require an inclusive process that ensures ownership to Authority members and recommendations that will be viewed as credible and technically and economically sound. A secondary goal of the project is to provide SWFWMD with the this information to assist in the District in the formulation of the Northern Planning Region 2020 Regional Water Supply Plan to maintain continuing consistency and continuity between the respective agencies.

Project Objectives – Population and Water Demand Estimates: Predictive analysis for population increases and resulting water supply demands are the basis of this regional water supply planning effort. Consistency with SWFWMD population forecasts, compliance per capita requirements and resultant water demands are critical to insuring that from both a planning and regulatory perspective that the Authority and the District are consistent. The Authority is interested in potable water demands for its members, but it is important to analyze other future water needs in and proximate to the Authority's area that will be competing for limited resources. WRA will include other potable, domestic and non-potable uses in its water supply planning effort. Conservation and Reuse Strategies: Demand reduction through water conservation and optimizing the use of reclaimed water is the most cost-effective way to prolong existing water supplies for Authority members. District compliance per capita requirements must be met and maintained by Authority members through cost-effective water conservation initiatives that will be developed and refined as part of this effort. Conservation programs will be analyzed using best available technologies and their cost effectiveness will be determined using the Alliance for Water Efficiency Water Conservation Tracking Tool. The availability of reclaimed water based on current and projected flows over the planning horizon will be analyzed together with regional sharing opportunities. Traditional and Alternative Water Source Availability: Analyses of surface and groundwater availability will be completed by WRA. Sustainable water supply development will be determined by reviewing surface water flow and by groundwater by modeling. Withdrawal impacts will be compared to both approved and planned (proxy) Minimum Flows and Levels (MFLs). Identification of Water Supply Projects and Infrastructure: Conceptual project designs will be developed considering previously identified projects and newly proposed alternatives. Emphasis will be placed on project phasing that has the highest economic feasibility. Modifications to previous designs and new designs will consider the most cost-effective treatment and design considerations and will also emphasize how projects can be phased to match growing demands in the region. Governance, Funding for Regional Water Supply Opportunities: Cost-effective and environmentally sensitive approaches to regional and sub-regional water supply development must be collaborative in structure. The Authority's Regional Framework Initiative was an early basis for this concept, but additional regional cooperative efforts will be explored. Governance structure and potential funding alterative will be analyzed. Regionalization with Authority members will require incentives. Those incentives must include funding and regulatory considerations. A major focus of this effort will be coordination with the District regarding the Cooperative Funding Initiative policies with respect to supporting projects in the Northern Planning Region.

5. Project Approach

Project Approach

Facilitation – The importance of outreach throughout project development cannot be overstated. WRA proposes a comprehensive outreach program to give ownership of both the water supply analyses and final product to stakeholders in the process. This includes the Authority Board, member governments, the Technical Review Committee (TRC), Southwest Florida Water Management District (SWFWMD); and other interested parties. Success of the RWSPU will be built on sound technical review, analyses and recommendations ***and*** effective communication with project stakeholders. The overall relevance and structure of the Authority is being tested by Board members and other outside interests. WRA proposes that this RWSP Update can be a "teaching moment" to garner the necessary support by members to allow the Authority to continue to carry out its important mission. Continual updates and opportunities for Board members to provide input into the plan will not only educate them on the intricacies of regional water management but the importance of the Authority's role in that effort and give them ownership in its outcome. Outreach is the cornerstone of the WRA approach and will include:

- *Peter Hubbell, Lead Facilitator, is educated and experienced in public facilitation dealing with complex water resource related issues. Hubbell is also a Florida Certified Mediator;*
- *Proposed regular Board briefings either in workshop or Board meeting sessions to gather input and educate members on the intricacies of water management, the importance of regional water supply planning and the relevance of the Authority in ensuring sustainable water supplies for the future. WRA subject matter experts will both lead and assist in these meetings;*
- *Creation of an electronic project management system for the free flow of information to stakeholders as the project progresses including data, draft report and comments generated by reviewers; and*
- *Development of a "project outreach program" to ensure participation in project development, including but not limited to: Individual kickoff meetings with Authority members; TRC & Board meeting presentations at key project milestones; website updates; meeting minutes; and the electronic project management system.*

Population and Water Demand Estimates and Projections – Forecasting population increases and the resulting water supply demands are fundamental to this regional water supply planning effort. Consistency with SWFWMD and SJRWMD population forecasts, compliance per capita requirements and resultant water demands are critical to insuring that from a planning and regulatory perspective the Authority and the District are consistent. WRA Project Team member GIS Associates (GISA) has more than 27 years of experience with designing and implementing GIS-based models and analytical tools for estimating and forecasting population and water demand. Their small-area models combine parcel data, census data, BEBR population estimates and projections, current and future land use/land cover, wetlands, planned developments, transportation infrastructure, utility service area boundaries, etc. GISA updates and reruns models for the SWFWMD annually, and also develops projections for SJRWMD, including the recently completed forecasts for the CFWI counties. Because GISA completed small-area population estimates and projections on behalf of SWFWMD in January of 2018 for all of Citrus, Hernando, Marion and Sumter Counties, GISA proposes the following approach:

- *Conduct meetings with local planners and utility representatives of WRWSA member governments to vet the data and assumptions used in our SWFWMD models, get data updates, identify self-supplied areas, and establish confidence among members of the data and assumptions going into these models;*

- *Refine the model inputs, rerun the models, and generate parcel-level GIS deliverables of estimates (2013-2017) and projections (2020-2045) consistent with BEBR's county numbers;*
- *Distinguish served from unserved populations and locate private irrigation wells using a data from utilities, SWFWMD, property appraisers and county health departments;*
- *Summarize population estimates and projections (distinguishing between served and unserved) by utility potable service area, county, water management district, and any other requested boundaries;*
- *Refine historical average gross per capita water use for each utility service area working with utilities and WRWSA staff by applying realistic future development trends, conservation measures, etc. Use to develop public supply water demand projections;*
- *Use population-weighted averages of residential per capita by county and projected unserved populations to develop projections of domestic self-supplied water use; and*
- *Develop spreadsheet comparing these public supply projections to utility-based projections of both population and water demand.*

Conservation and Reuse Strategies – Water conservation is an important initiative for Authority members moving forward to effectively meet future demand. As compliance per capita requirement deadlines of 2019 approach, cost-effective water conservation initiatives custom fit to member governments will be developed and refined as part of this effort. Updated information on those utilities that are currently compliant, trending towards compliance and those in need of aggressive conservation will be identified by WRA. Tasks will include:

- *Utilizing the "Alliance for Water Efficiency Water Conservation Tracking Tool" WRA will evaluate the water savings, costs, and benefits of conservation programs for specific water utilities in the Authority.*
- *Meeting with utilities to discuss and refine approaches for demand reduction;*
- *Quantification of water savings and potential costs of conservation programs;*
- *Determination of the availability of reclaimed water based on current and projected flows over the planning horizon along with the potential of regionalizing reclaimed systems;*
- *Analyzing beneficial uses of the reclaimed water and quantification of water savings; and*
- *Establish the conservation potential for non-public supply users to determine if their water savings can be translated into additional traditional sources for Authority members.*

Traditional and Alternative Water Source Availability – Analyses of surface and groundwater availability will be completed by WRA including analyses of surface water flow records, groundwater impact modeling and comparing impacts from both SW & GW withdrawals to Minimum Flows and Levels (MFLs) established by SWFWMD. Where MFLs are contemplated but not completed, proxy MFLs, coordinated with the District, will be used to constrain potential water supply development. Tasks will include:

- *Review current regulatory restrictions including the District's WUP & CUP rules and MFLs adopted or being contemplated by the District. Ensure environmental constraints are met;*
- *Utilize the Northern District Groundwater Model developed jointly by SWFWMD & SJRWMD to determine potential allowable groundwater withdrawals within the Authority;*
- *Evaluate updated flow records for the Withlacoochee and Ocklawaha Rivers to determine potential yields from surface waters;*
- *Determine opportunities for reclaimed water project augmentation using SW (rivers/lakes); and*

- *Non-structural, regulatory analyses of water demand trends in the area. How and where will the demand change in relation to WUP/CUP's that could be retired or modified to meet the new use or future increased demands.*

Identification of Water Supply Projects and Infrastructure – The conceptual project designs will consider the previous WRWSA reports, however, special emphasis will be placed on developing project phasing and projects that have the highest economic feasibility. For instance, long-term demand may dictate that a large surface water or desalination treatment facility is needed. For this reason, the implementation of these systems must be phased. Each initial system has to provide the basis to expand, be cost-effective, and include a sufficient customer base to generate the needed revenue to sustain the system. Tasks will include:

- *Identify available water sources and determine surplus or deficit demands within the service areas over time;*
- *Determine economic viability of meeting planning demands using these sources, analyzing treatment systems; expansion capability; size & layout of transmission mains; route options; land & easement requirements; and customer base;*
- *Utilize accepted costing tools such as the McGraw Hill Construction Cost Indexes to determine projects capital, O&M and projected costs per 1,000 gallons of water produced;*
- *Review and update projects that were identified in previous RWSP's;*
- *Develop new conceptual projects that are either stand-alone or combinations of identified projects;*
- *Develop a project matrix to rank potential projects and strategies and rank projects and strategies based on consensus parameters including but not limited to:*
    - *Environmental Impacts; Permittability; Public Acceptance; Ability to Phase; Long-Term Viability of Source; Cost; Consistency with Regional Framework; Implementation Timing;*
- *Ensure that projects identify partners, implementation steps, proposed schedule and action items for near-term, mid-term and long-term projects.*

Governance, Funding for Regional Water Supply Opportunities – A major priority of the Authority is to analyze and where appropriate promote the regionalization of water supply development amongst members. This regionalization can include traditional source such as groundwater and surface water. Our analysis will also review opportunities for cooperation between governments on alternative supplies such as desalination and reclaimed water. Tasks will include:

- *Develop a template for the regional development of regional and sub-regional projects containing the basic tenants (ownership, funding, cost sharing, participant structure, permitting, etc.) required by members, SWFWMD and the Authority;*
- *Create a "white paper" outlining a rationale for SWFWMD to support the development of groundwater in a regional manner including such as: financial support; regulatory incentives; technical assistance; and land acquisition for facilities and transmission easements; and*
- *Assist in lobbying SWFWMD for this change in the Cooperative Funding Initiative (CFI) policies and practices to support both traditional and alternative water supply development in a regional manner.*

6. References

CLIENT REFERENCES

Client	Contact	Phone Number	Work Performed
Hillsborough County	T. Barton Weiss, P.G., Dir., Utility Support Div. 925 East Twiggs, Tampa, Florida 33602	813-272-5977 X43330	Regional Project Development; Project Design & Feasibility; Water Use Permitting; Demand Projections; Conservation.
City of Cocoa	John "Jack" A. Walsh, P.E., Utilities Director 351 Shearer Boulevard Cocoa, Florida 32922	321-433-8686	Regional Water Supply Planning & Design; Consumptive Use Permitting; Facilitation; Demand Projections.
Jacksonville Electric Authority (JEA)	Paul Steinbrecher, P.E., Director Environmental Permitting and Assessments 21 West Church Street Jacksonville, Florida 32202	904-665-5653	Demand Projections, Consumptive Use Permitting; GW Modeling, Regional Water Supply Planning; Water Supply Planning; Water Conservation.
City of Leesburg	Raymond S. Sharp, Director (Retired) Environmental Services/Public Works City of Leesburg Environmental Services 223 South 5th Street Leesburg, Florida 34748-5816	904-687-2189	Water Supply Planning; Demand Projections; Regional Project Development.
Southwest Florida Water Management District	Eric DeHaven, P.G. / Barbara Nordheim-Shelt Southwest Florida Water Management District 2379 Broad Street Brooksville, Florida 34604-6899	813-985-7481 x2118 352-796-7211 x4288	Karst Hydrogeology; Groundwater Flow Modeling; Contaminant Fate and Transport Modeling; Geochemical Modeling and Statistical Analysis
Hillsborough County Planning Commision	Shawn College, AICP 601 E. Kennedy Blvd., 18th Floor Tampa, FL 33602	813-273-3774 X367	Facilitation; Public Involvement; Meeting Planning & Development.
Saint Leo University	Eric Weekes, VP of Business & Finance Saint Leo University 33701 State Road 52 Saint Leo, Florida 33574	352-588-8200	Water Use & Permitting; Water Audit & Conservation; Zoning; Site/Civil Engineering & Design.

7. Required Forms

EXHIBIT A

WITHLACOOCHEE REGIONAL WATER SUPPLY AUTHORITY
REQUEST FOR QUALIFICATIONS
REQUIRED COVER PAGE

SUBMIT QUALIFICATIONS TO: Withlacoochee Regional Water Supply Authority
3600 W. Sovereign Path, Suite 228
Lecanto, Florida 34461

Direct Inquiries to: LuAnne Stout, Administrative Assistant
Phone: 352-527-5795 E-mail: lstout@wrwsa.org

DATE POSTED:	PROPOSALS WILL BE OPENED: January 25, 2018

TITLE: WRWSA Regional Water Supply Plan Update

SPECIFICATIONS: This effort is to update the WRWSA Regional Water Supply Plan. Portions of the WRWSA Regional Water Supply Plan Update will be incorporated into the Southwest Florida Water Management District's (SWFWMD) Regional Water Supply Plan for its Northern Region. SWFWMD is a cooperator and is co-funding this work effort.

Respondent Name: Water Resource Associates, LLC, dba WRA

Mailing Address: 4260 W. Linebaugh Avenue

City-State-Zip: Tampa, Florida 33624

Telephone Number: 813-265-3130

E-mail address: phubbell@wraengineering.com

Authorized Signature:

Full Name (please print or type): Peter G. Hubbell

Title (please print or type): Principal

We the above signed, as Respondents hereby declare that we have carefully read this Request for Qualifications and its provisions, terms, and conditions covering the equipment, materials, supplies or services as called for, and fully understand the requirements and conditions. We certify that this proposal is made without prior understanding, agreement, or connection with any corporation, firm, entity, or person submitting a proposal for the same goods/services (unless otherwise specifically noted), and is in all respects fair and without collusion or fraud. We agree to be bound by all of the terms and conditions of this Request for Qualifications and certify that we are authorized to sign this proposal for the Respondent.

IT IS THE RESPONDENT'S RESPONSIBILITY TO ASSURE THAT HIS/HER SEALED PROPOSAL IS DELIVERED AT THE PROPER TIME TO THE AUTHORITY. PROPOSALS WHICH FOR ANY REASON ARE NOT SO DELIVERED WILL NOT BE CONSIDERED.

EXHIBIT B

KEY PERSONNEL
For
REGIONAL WATER SUPPLY PLAN UPDATE

The Consultant's proposed project team/key personnel are to be indicated below. The Consultant's 'Project Officer' shall also be identified.

Person's Name	Job Classification	Area of Expertise	Office Location
Peter G. Hubbell	Principal in Charge	(5) (6)	Tampa, FL
Roy Mazur, P.E., AICP	Project Officer	(2) (4) (6)	Tampa, FL
Richard L. Doty	Demographer	(1)	Gainsville, FL
Matthew Miller	Environmental Manager	(2) (3) (4)	Tampa, FL
Danielle Clooney, E.S.	GIS Analyst	(1) (2) (3) (4) (6)	Tampa, FL
Mike Alfieri, P.G.	Hydrogeologist	(1) (3) (4)	Tampa, FL
Domenick Tufariello, P.E.	Senior Engineer	(3)	Tampa, FL

(1) Population & Water Demand Projections - Non-Potable Water Demand, Spatial Demand Determination

(2) Water Conservation, Demand Reduction& Reclaimed Water - Project Identification, Technical Evaluation, Water saving Quantification, Cost Effectiveness, Evaluation

(3) Surface Water/Groundwater Groundwater Availability - Groundwater Monitoring, SW Modeling, MFLs, Environmental Systems, Permitting

(4) Project Design & Feasibility - Conceptual Design, Cost Estimating, Alternatives Evaluation, Treatment Systems, Value Engineering, Permitting

(5) Regional Project Development - WRWSA Regional Framework, Governance Agreements, Florida Water Law

(6) Facilitation/Outreach - Meeting Development, Public Facilitation, Mediation, Consensus Building, Board Presentations

EXHIBIT C

SWORN STATEMENT PURSUANT TO SECTION 287.133(3)(a), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted to the WITHLACOOCHEE REGIONAL WATER SUPPLY AUTHORITY by Peter G. Hubbell, Principal

(Print individual's name and title)

for Water Resource Associates, LLC dba WRA

(Print name of entity submitting sworn statement)

whose business address is 4260 W. Linebaugh Avenue, Tampa, Florida 33624
and (if applicable) its Federal Employer Identification Number (FEIN) is 59-3408132
(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement: _____,

2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or of the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(l)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an "affiliate" as defined in Paragraph 287.133(l)(a), Florida Statutes, means:

a) A predecessor or successor of a person convicted of a public entity crime; OR

b) An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm=s length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public

entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members and agents who are active in management of an entity.

6. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (**Indicate which statement applies.**)

✓ Neither the entity submitting this sworn statement, nor any of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, nor any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

___ The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July l, 1989. However, there has been a subsequent proceeding before a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (**Attach a copy of the final order.**)

I UNDERSTAND THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017 FLORIDA STATUTES FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

Pam G. Dee
(Signature)

STATE OF Florida

COUNTY OF Hillsborough

Sworn to and subscribed before me ~~this day of 2017~~ 1/23/2018. Personally known ✓

OR produced identification _____

(Type of Identification)

Notary Public State of Florida
Rita H Garrison
My Commission GG 147515
Expires 11/16/2021

Rita H. Garrison
Notary Public

Name (Printed) Rita H. Garrison

My commission expires Nov. 16, 2021

(Printed typed or stamped Commissioned name of Notary Public)

8. Appendix A

(Personnel Resumes)

Peter G. Hubbell

Principal / Senior Hydrologist

Peter G. Hubbell is a Principal, Senior Hydrologist and cofounder of the consulting firm, Water Resource Associates, Inc. (WRA), located in Tampa, Florida. Hubbell was formerly Executive Director of the Southwest Florida Water Management District (SWFWMD) for over eight years and worked at the agency for a total of nineteen. At SWFWMD, he was responsible for the development of water resource programs and overall management of District operations.

Expertise

Water Supply Planning & Water Management
Water Use Permitting; Alternative Water Supply Development
Alternative Dispute Resolution
Public Facilitation

Experience

43 years' experience / 21 years with WRA

Education

BS / Hydrology and Water Resource Management, University of Maryland

Registrations / Certifications

Florida Supreme Court Certified Mediator

Recognition / Professional Activity

American Water Resources Association, National Award, the 1997 William C. Ackerman Medal for Excellence in Water Management
Chairman, Florida's "Bluebelt Commission" on Aquifer Recharge
Founding Member, Policy Council, International Water Resource Network
Founding Member, Florida Aquarium
Florida Conflict Resolution Consortium
National Research Council, Committee on Valuing the Nation's Groundwater
American Water Resources Association
American Water Works Association

Related Projects – Water Resources

Withlacoochee Regional Water Supply Authority (WRWSA) – General Services Contract – 2010 thru 2018

WRA has acted as the general services consultant for the WRWSA for the past eight years. In that capacity WRA has provided technical support to the Executive Director and the WRWSA Board on a range of water management and water supply issues. This has included: Legislative analysis; coordination with regulatory agencies; review of proposed MFL's; meeting attendance on behalf of the WRWSA; facilitation; support for the CAB Wellfield; review of proposed WUPs and CUPs; analysis of proposed rules and statutes; hydrologic and hydraulic analyses; and other related services requested by the ED.

WRWSA – Marion County Water Conservation and Reclaimed Water Initiative – July 2012 Project Manager

WRA analyzed water conservation and reclaimed water opportunities for Marion County, FL and its incorporated municipalities. This included an inventory of existing programs and reclaimed projects. Based on population projections potential water savings and impact to per capita usage utilizing additional water conservation and reclaimed water initiatives was analyzed.

WRWSA – Regional Framework Initiative December 2011 – Project Manager

A key recommendation from the Phase II report was the establishment of a "regional framework" for future water supply development. The framework is a plan that promotes regional and sub-regional water supply development with the objective of maximizing traditional groundwater supplies while minimizing economic and environmental impacts. It also considers the ultimate introduction of alternative water supplies in the region.

WRWSA – Withlacoochee Master Regional Water Supply Planning and Implementation Program – Phase II – Detailed Water Supply Feasibility Analyses – April 2010 - Project Manager

WRA evaluated potential water sources to assess environmental impacts, ability to permit, public perception, long-term viability of source, relative cost and time required to implement, conflicts with existing sources, ability to serve multiple users, and compatibility with current utility systems. Detailed analyses prepared during Phase II will progress in a manner largely corresponding with priority areas identified in the updated Master Regional Water Supply Plan (Phase I) as areas of the region with the highest water supply demand.

WRWSA – Withlacoochee Master Regional Water Supply Planning and Implementation Program – Phase VII – Water Supply Feasibility Analyses, Northern District Modeling and Local Community Technical Support – 2009 - Project Manager

Utilizing SWFWMD's "Northern District Model" and other appropriate tools, the Authority sought to determine a planning level estimate of how much additional groundwater can be withdrawn (allocated) in order to devise a range of management schemes to minimize impacts on adopted flows or levels. WRA interpreted these results for local communities lacking in technical support.

WRWSA – Regional Water Supply Plan Update – March 2007 – Project Manager

WRA updated the WRWSA water supply plan produced in 1997. This included population projections and related water demand for a 20-year planning horizon. WRA analyzed potential projects, including both traditional and alternative supplies, to meet water demand and conducted regional groundwater modeling to determine available groundwater resources considering environmental constraints.

Lake County Water Supply Plan – Lake County Water Alliance – Project Manager

WRA developed the Lake County Water Supply Plan. This includes evaluating existing plans and studies for each Alliance member's government. This entailed assessing the existing plans and combines them with additional data and evaluations to develop a plan with new strategies and options that optimizes the use of groundwater resources and identifies alternative water supply development projects to meet projected water supply needs in Lake County, without unacceptable environmental or water quality impacts.

Related Projects – Public Facilitation

Facilitation Services – Hillsborough County City/ County Planning Commission – Visioning

Developed, designed and facilitated a two day visioning exercise regarding updates to the County's Comprehensive Plan. Participants included: government officials; developers; agencies; County staff; & other stakeholders in the planning process

Facilitation Services - Suwannee River Water Management District (SRWMD)

Developed, designed and facilitated a strategic planning and consensus building process for the Governing Board and the staff of the SRWMD. The results of the sessions were utilized to update of the SRWMD District Water Management Plan.

Facilitation Services- National Environmental Dialogue on Pork Production

Provided program design, development and facilitation and mediation services for the establishment of best management practices and public participation in the controversy surrounding concentrated animal feeding operations (CAFO) in the pork production industry nationally. The process developed consensus on regulatory and non-regulatory strategies for establishment of alternative strategies for environmental protection with stakeholders in the CAFO debate. Recommendations were used by the USEPA in the development of Federal rules for regulating CAFO's nationally.

Roy A. Mazur, P.E.

Project Officer

Mr. Mazur is a Senior Project Manager at WRA with over 19 years of multidisciplinary experience in the water resources arena; including Planning Director and Bureau Chief over the Operations and Land Management for the SWFWMD Division Director for Hillsborough County Development Services; and Stormwater Section Manager for the County's Public Works Department. Mr. Mazur has unique expertise in public outreach and meeting facilitation having played the lead role in the planning and implementation of collaborative public/private projects at SWFWMD and Hillsborough County. Mr. Mazur has significant experience resolving complex water resource related problems including alternatives planning and evaluation, cost projections and project execution. He has extensive experience managing parallel projects comprised of diverse, multi-disciplinary teams with the outcomes achieving exceptional results.

Experience

19 years of experience

Education

B.S./Civil Engineering

Professional Affiliations

PE – State of Florida #56745
AICP – American Planning Association

Related Projects

Division Director - Hillsborough County Development Services - 2013-2016

Implemented regulatory programs for horizontal land development construction, land alteration and excavation and environmental code enforcement. Facilitated solutions to land development construction issues impacting individual homeowners, community organizations and home owners associations. Managed a staff of 28 employees including stormwater design. He is versed in handling public citizen and contractor complaints and finding solutions.

Stormwater Section Manager – Hillsborough County, FL – 2006 – 2007

Management of operation and budget of six technical teams including CIP, Culvert Replacement and Stormwater Master Planning. Tasks included consultant contract documentation, managing internal and consultant technical teams, producing construction documents, facilitating administrative briefings and public meetings. Managed a staff of 78 predominantly technical employees. Directed and prioritize an annual CIP budget of $14M and an annual operating budget of $7.2 million.

Planning Director – SWFWMD
Bureau Chief – SWFWMD Structure Operations & Land Management – 2007-2013

Responsible for identifying technical approaches, producing project schedules, managing technical staff, producing project deliverables and implementing public outreach strategies for SWFWMD environmental planning initiatives. Allocated a $10.2 million budget within a Bureau of 79 employees. Directed the use and management of the District's 460,000 acres of land holdings. District's Incident Commander for weather event emergencies. As Planning Director, Mr. Mazur oversaw Directed the review of land use transition documentation, providing state and local government assistance, and producing economic, demographic and water demand analysis. Performed as Project Manager on projects such as the 2010 Regional Water Supply Plan and 2011 Surplus Land Evaluation.

Water Resource Engineering – Hillsborough County, Autodesk, CDM 1997-2006

Prior to promotion into the Stormwater Section Manager position at Hillsborough County, Mr. Mazur served as General Manager under the County Engineer. In this capacity, he coordinated divisional issues such as Emergency Support Functions and

review of land use change proposals. Mr. Mazur also managed special projects designated by the County Engineer such as disputes between County CIP projects and area residents.

At Autodesk, Mr. Mazur directed the entire lifecycle of the Visual Drainage software product. Mr. Mazur conceived product specifications based on market and client research, conducted research on the technical formulas and calculations, interfaced with code writing team creating the solution engines and user interface and produced revenue forecasts, overhead schedules, and client profiles.

At CDM, Mr. Mazur served on engineering project teams focused in the areas of Solid Waste, Stormwater Design, and Floodplain Mapping.

RELATED PROJECTS:

Project Manager – Construction Plan Review Process Streamline

Mr. Mazur led a team of plans examiners, lawyers and administrative technicians in devising a more streamline process for accepting building construction plans for review by Hillsborough County staff. The resulting "Parallel Review" process allows vertical building plans to be reviewed simultaneously to horizontal site construction plans. The resulting process saves land development projects approximately 5 weeks of time without sacrificing the quality of the County's regulatory review.

Project Manager - Forest Hills Lake Study and Alternatives Analysis

Managed project scoping, consultant award, technical review and public / political outreach for the solution of widespread flooding in the Forest Hills area of Hillsborough County. Mr. Mazur led the effort for constructing new water quality technologies within the new stormwater infrastructure. Mr. Mazur facilitated several neighborhood meetings in addition to numerous briefings to political officials.

Project Manager - 2010 SWFWMD Regional Water Supply Plan

Managed project scoping and execution of the 2010 Regional Water Supply Plan (RWSP) - tasks included managing internal, multi-disciplinary technical teams, producing deliverables, administrative briefings and facilitating public meetings, state level presentations and managing consultant contract documents. Mr. Mazur conceived and organized the first "Northern Work Group" for the RWSP. The group was comprised of state regulatory groups, local citizen groups and public utility staff.

Project Manager - 2011 SWFWMD Surplus Land Assessment

Upon direction from the SWFWMD Governing Board, Mr. Mazur led a team of land managers, environmental scientists and IT technicians to formulate a scientific, technical methodology to identify SWFWMD owned lands available for surplus. The assessment also considered methods for marketing the lands identified. Mr. Mazur personally facilitated extensive public and political outreach on the unprecedented analysis.

Richard L. Doty

GIS Coordinator & Research Demographer

Project Role: Population and Water Demand Forecasting, GIS Support

Expert at designing and implementing GIS-based models and analytical tools for estimating and forecasting population, land use, water demand, and the ecological impacts of development. Mr. Doty has 26 years of experience with developing small-area population estimation and projection models for local government, utilities and water management. Also develops models for forecasting water demand and land use, and has assisted with several of SJRWMD's Water Supply Assessments and Plans. Has 26 years of GIS experience with the Esri product line, including program management, project management, database design, development and QA/QC, GIS modeling and analysis, GIS programming and application development and training.

EXPERIENCE

26 years of experience

EDUCATION

M.A – Urban & Regional Planning (UF)
B.S. – Food & Resource Economics (UF)

EXPERTISE

Population Estimation and Forecasting

- Small-area GIS Population Models
- Demographic Analysis
- Land Use Analysis and Forecasting
- Developer of official state population estimates for state, counties and cities
- Subject Matter Expert / Expert Witness

Water Demand Estimation and Forecasting

- PS, DSS, Ag, Rec, CII, PG
- Water Supply Planning
- Consumptive Use Permitting
- Groundwater Model Inputs and GIS Support
- Water Conservation Analysis and Modeling
- Utility Customer Data Mining and Analysis
- Subject Matter Expert / Expert Witness

GIS Analysis and Support

- 26 Years Experience with Esri products
- 10 Years Experience Supporting SJRWMD Water Supply Planning, Water Use Regulation and Groundwater Modeling
- Familiarity with SJRWMD's GIS, Needs, Data, and Staff

RELATED PROJECTS

Population Projection Modeling and Demographic Analysis, Southwest Florida Water Management District

Project Manager. Developed and annually updating comprehensive, geospatial model that projects future population for a 17-county area (including Lee) at the property parcel level to 2045 in five year increments. The GIS-based model incorporates parcel data, census data, BEBR data, current and future land use/land cover, wetlands, planned developments, transportation infrastructure, utility service area boundaries, etc. In addition to permanent population, projections of peak seasonal, functional seasonal, tourist, and net commuter populations were developed.

Population Estimation and Forecasting, JEA

Project Manager for development of a population forecast at the property parcel level for the four counties overlapping JEA's service areas using GISA's Small Area Population Projection Model. The Model projects future population in five year increments to the year 2045. It incorporates parcel data, census data, BEBR data, current and future land use/land cover, wetlands, planned developments, transportation infrastructure, utility service area boundaries, etc. Growth trends from historical population estimates were constrained and guided using the geospatial data, and total growth was calibrated to the county level forecasts of the University of Florida's Bureau of Economic and Business Research (BEBR). Property parcel level results were attributed with all permutations of JEA's service areas to facilitate service area summaries.

Central Florida Water Initiative (CFWI) Small Area Population Estimates and Projections Project

Project Manager at the University of Florida's Bureau of Economic and Business Research (BEBR) for development of population estimates (2010-2016) and projections (2020-2045) at the property parcel level for the six counties (including Brevard) within the CFWI Planning Area using GISA's Small Area Population Projection Model. The Model projects future population in five year increments to the year 2045. It incorporates parcel data, census data, current and future land use/land cover, wetlands, planned developments, transportation infrastructure, utility service area boundaries, etc. Growth trends from historical population estimates were constrained and guided using the geospatial data, and total growth was calibrated to BEBR's county level forecasts. Property parcel level results were summarized by potable water utility service areas.

Spatial Distribution of Estimated Water Use for the St. Johns River Water Management District (SJRWMD)

As the Principal Analyst in a subcontract with Jones Edmunds, developed spatial distribution of 2000-2012 water use estimates for 175 counties in Georgia, Alabama, and South Carolina that fell within the North Florida-Southeast Georgia (NFSEG) groundwater model domain. Estimated indoor and outdoor water use by type (public supply, domestic self-supply, industrial self-supply, golf course self-supply, and power generation self-supply) using a combination of 2010 census block data, the USGS National Land Cover Database (NLCD), and individual large water use locations. Derived the monthly values by applying historic monthly average indoor and outdoor use from SJRWMD data, adjusting the outdoor use for "wet," "dry," and "normal" climate conditions using North American Land Data Assimilation Systems (NLDAS) rainfall data, and applying the weighted average of hose and in-ground irrigation methods to the outdoor use for each census block. Calibrated total water use to USGS county water use estimates by type.

Consumptive Use Permit Reviews, SJRWMD

Project Manager / Principal Consultant / Expert Witness providing eight years of on-going technical support regarding population and water demand projections submitted to SJRWMD by water utilities as part of the permitting process. Tasks included:

- Training SJRWMD staff to review and analyze estimates and projections of population and water demand
- Analyzing new data provided by utilities, planners, developers, etc.
- Incorporating new, credible data into model and updating projections
- Discussing results and recommendations with utilities and planners
- Making final recommendations to permit reviewers
- Serving as an expert witness

Geospatial/Geostatistical Analysis and Population and Water Demand Projection Modeling, SJRWMD

Project Manager. Developed and awarded multiple contracts to update a comprehensive, spatial model that projects future population and water demand for an 18-county area at the property parcel level to 2035 in five year increments. Developed methods for projecting water demand by category (public supply, domestic self-supply, commercial/industrial/ institutional self-supply, recreational self-supply, agricultural self-supply and reclaimed water). Developed and implemented methodologies for spatially distributing water demand to groundwater model domains. Made numerous presentations of model results to various public agencies and utilities to build consensus for future planning and permitting decisions based on model results. Assisted with development of SJRWMD's 2003 and 2008 Water Supply Assessments, and trained staff in permit review methods, the use of model data, water use data updates and quality assurance.

Matthew P. Miller, P.W.S.

Environmental Manager

Matthew P. Miller, P.W.S. is the Environmental Manager at Water Resource Associates, Inc. (WRA), for WRA's Tampa, Sarasota and Ft. Myers offices. Mr. Miller has over a decade of experience in the public and private sectors in Central and Southwest Florida. During his tenure as an Environmental Scientist and Hydrologist at the Southwest Florida Water Management District (SWFWMD), he was the lead Environmental reviewer for public supply water utility applications in Manatee, Sarasota, Charlotte and Desoto Counties. Mr. Miller has managed a variety of environmental projects and provides a broad range of expertise in hydrogeologic services including: groundwater and wetland monitoring; groundwater modeling; surface and groundwater quality monitoring and data analysis.

Areas of wetland and listed species permitting that Matthew has practiced in his career include:

- Federal, state and local wetland permitting (USACOE, SWFWMD, SJRWMD, SFWMD, NWFWMD and numerous local governments)
- Federal and state listed species permitting (USFWS/FWC)
- Consumptive (Water) Use Permitting and compliance for public supply utilities, golf courses, homeowner's associations, borrow pits, residential and commercial developments
- Review of Annual Wellfield Monitoring Reports
- Review of Annual Mining Reports
- Aerial imagery interpretation and analysis
- Ecologic and hydrologic impact assessments
- Surface and groundwater quality monitoring/reporting
- Statistical analysis review of hydrologic data: trend analysis
- Groundwater modeling using MODFLOW (Groundwater Vistas) for impacts to natural systems and existing legal users.

Experience

12 years of experience

Education

MS - Environmental Science and Policy
BS - Biology

Professional Affiliations

National Association of Environmental Professionals (NAEP)
Florida Association of Environmental Professionals (FAEP) – Southwest, Central and Tampa Bay Chapters
Society of Wetland Scientists
Charlotte Harbor National Estuary Program (CHNEP) – Technical Advisory Committee (TAC)

Related Projects

Englewood Water District Utilities – Sarasota County, FL

At the Southwest Florida Water Management District (SWFWMD), Mr. Miller reviewed annual compliance activities for the Englewood Water District (EWD) and was the SWFWMD Environmental Scientist reviewer for EWD's Water Use Permit (WUP) renewal. Compliance activities included ensuring tasks outlined in the Consent Order was performed, including the establishment of a new wellfield to avoid or minimize wetland impacts at existing wellfields. EWD also submitted an Annual Hydrobiologic Monitoring Plan (HBMP) to establish the extent of wetland impacts due to groundwater pumping.

In the evaluation of the Water Use Permit renewal, Mr. Miller worked with EWD and their consultants to establish a withdrawal schedule based on the characteristics of the production aquifer and the wetland water levels. This withdrawal schedule promotes the restoration of wetland hydroperiod. Mr. Miller also evaluated supporting documentation for the new wellfield (hydrogeologic cross sections, groundwater modeling) for impacts to environmental features, particularly wetlands.

Peace River/Manasota Regional Water Supply Authority (PRMRWSA) - Desoto County, FL

At SWFWMD, Mr. Miller reviewed the Water Use Permit (WUP) Hydrobiologic Monitoring Plan documents submitted for the PRMRWSA surface water withdrawals from the Peace River. Mr. Miller worked with the District Project Manager, water use regulation staff, PRMRWSA staff and their consultants, and the PRMRWSA scientific review panel to ensure the PRMRWSA was compliant with their WUP.

Manatee County Utilities – Manatee County, FL

At SWFWMD, Mr. Miller reviewed annual compliance activities for Manatee County Utilities and was the District's Environmental Scientist reviewer for Manatee County's Consolidated Water Use Permit (WUP). Compliance activities included the review of the East County Wellfield Hydrobiologic Monitoring Plan (HBMP). In the evaluation of the Water Use Permit modification, Mr. Miller worked with Manatee County to establish a wetland HBMP for the new North County Wellfield.

Sarasota County Utilities - Sarasota County, FL

At SWFWMD, Mr. Miller reviewed annual compliance activities for Sarasota County Utilities and was the District's Environmental Scientist reviewer for modifications to Sarasota County's Hydrobiologic Monitoring Plan (HBMP) at the T. Mabry Carlton Reserve Wellfield. Compliance activities included the annual review of the T. Mabry Carlton Reserve Wellfield HBMP report.

In the evaluation of the Water Use Permit modification, Mr. Miller worked with Sarasota County to reduce the scope of wetland monitoring based upon previously collected data without compromising the overall goal of the remaining wetland monitoring and in consideration of future withdrawal flexibility.

City of Sarasota Utilities - Sarasota, FL

At SWFWMD, Mr. Miller reviewed annual compliance activities for the City of Sarasota at the Verna Wellfield. Compliance activities were primarily the annual review of the Verna Wellfield Hydrobiologic Monitoring Plan (HBMP) report. The HBMP report contained surficial aquifer and Floridan aquifer water level data at numerous locations in the wellfield, staff gage data at the wetlands, water quality data at the wells and vegetative monitoring at the wetlands.

Unmanned Aerial Vehicle (UAV) Ecological Project – Throughout Florida

WRA was the first Environmental Consultant to submit wetland monitoring data to the Southwest Florida Water Management District (SWFWMD) regulatory division and have it accepted. WRA uses a UAV (drone) to monitor wetland mitigation areas including for native/exotic coverage and tree survivorship. WRA has also utilized a UAV to conduct wildlife surveys. Our Environmental team has been featured on the local ABC news for our use of the UAV for wetland and wildlife projects and Mr. Miller was invited to participate in a 30 minute round table segment to discuss UAV use in southwest Florida. WRA has utilized the UAV to survey for bald eagle nests, including coordination with the Florida Fish and Wildlife Conservation Commission to ensure the survey methodology utilized would not disrupt nesting bald eagles.

ABC News Story Links here:

ABC Round-table Discussion:

https://youtu.be/bBnCVdrUEmc

http://www.mysuncoast.com/news/local/drone-study-takes-a-closer-look-at-wading-birds-around/article_1d4e869c-ca7c-11e7-8628-6b30ab2074eb.html

http://www.mysuncoast.com/news/drone-zone-the-future-of-the-flying-machines/article_499fe172-ca50-11e7-b913-6f9ee1cd3e69.html

Danielle Clooney

GIS Analyst

Danielle Clooney, is an Environmental Scientist and GIS Specialist at Water Resource Associates, LLC. (WRA), located in Tampa, Florida. Mrs. Clooney is a recent graduate from the University of South Florida. Her work at WRA includes to creation of land management and acquisition maps in GIS, submitting Environmental Resource Permit (ERP) applications, conducting wetland delineations, setting seasonal high water levels, conducting wildlife surveys, creating wildlife management plans, and completing UAV surveillance for wildlife and wetlands monitoring.

Experience

2+ years of experience

Education

B.S – Environmental Science

Professional Affiliations

Tampa Bay Association of Environmental Professionals (TBAEP),
Florida Association of Environmental Professionals (FAEP)

Certifications

-F.A.A. Certified U.A.V. Pilot
-Gopher Tortoise Agent

Related Projects

Unmanned Aerial Vehicle (UAV) Ecological Project – Throughout Florida

WRA was the first Environmental Consultant to submit wetland monitoring data to the Southwest Florida Water Management District (SWFWMD) regulatory division and have it accepted. WRA uses a UAV (drone) to monitor wetland mitigation areas including for native/exotic coverage and tree survivorship. WRA has also utilized a UAV to conduct wildlife surveys. Our Environmental team has been featured on the local ABC news for our use of the UAV for wetland and wildlife projects. WRA has utilized the UAV to survey for bald eagle nests, including coordination with the Florida Fish and Wildlife Conservation Commission to ensure the survey methodology utilized would not disrupt nesting bald eagles. This approach has resulted in significant time and financial savings.

Wading Bird Nest Survey - North Port, FL

Mrs. Clooney conducted a nesting wading bird survey using a UAV. She performed an analysis of the data collected which can be used to kick-off future surveys. GIS data was used to prepare for design flight plans prior to a field visit. GIS was used to analyze and create survey networks or 'paths' and an inventory of common and endangered nesting birds.

Benderson Compliance- Sarasota, FL

Mrs. Clooney has compiled a comprehensive spreadsheet of permit information on all Benderson properties in the state of Florida. To improve permit organization and access, WRA has created an interactive permit map for Benderson using ESRI online. ESRI online allows technical and non-technical users the ability to view spatial data on a variety of ESRI provided basemaps.

South Branch - Pasco County, FL

Mrs. Clooney created land management maps that included its natural community, invasive species, burn units, and mitigation phasing.

Mims - Polk County, FL

Mrs. Clooney has delineated and inventoried the on-site wetland and surface water areas, set seasonal high water elevations, and quantified the wetland functionality of over 600 acres of on-site wetlands and surface waters. Mrs. Clooney has created an extensive geodatabase to organize these data points. Mrs. Clooney is working with our clients to develop an ESRI Online map to track wetland conditions and permitting requirements throughout the life of the project.

Michael C. Alfieri, P.G., P.Hg., CGWP

Principal Hydrogeologist

A professionally licensed geologist in thirteen states and a nationally certified/registered hydrogeologist, Mr. Alfieri currently manages the operation of hydrogeologic services for Water Resource Associates, LLC (WRA). As a Principal Hydrogeologist at WRA, he provides: geologic, hydrogeologic, and karst science interpretation and evaluations; consumptive/water use permitting assistance; alternative water supply solutions; groundwater flow modeling; and expert witness services. Mr. Alfieri is a past Chair of the Florida Board of Professional Geologists and the Chairman of ASTM Sub-Committee D18.21.03: Well Design, Maintenance & Construction.

EXPERIENCE

20 years of experience

EDUCATION

M.A – Geological Sciences
B.A. – Geology/Environmental Studies

EXPERTISE

Florida Karst Geology/Hydrogeology
- Groundwater Flow Regimes and Economics;
- Fate and Transport;
- Surface Water-Groundwater Interaction;
- Aquifer/Well Performance Testing and Evaluations
- Florida Karst (Lineament Evaluations, Springs/Spring shed Evaluations, Subsidence, Conduit Flow and Transport, etc.)

Florida Groundwater Models
- USGS Groundwater Flow Models: Peninsular Florida (USGS MegaModel);
- SWFWMD District-Wide Regional Model v1-3 (DWRMv1-3); Northern District Model v5 (NDMv5)
- SJRWMD Groundwater Flow Models: Northeast Florida (NEF), North-Central Florida (NCF), Volusia County (VOL), East-Central Florida (ECF), East-Central Florida Transient (ECFT), and East-Central Florida Steady-State (ECFS)
- SRWMD Groundwater Flow Model: North Florida / South Central Georgia (NFM)

Water Use/Consumptive Use Permitting (WUP/CUP) Minimum Flows and Levels
Alternative Water Supply Development
Potable and Non-potable Well Design, Permitting, Construction/Construction Oversight, and Maintenance

PROFESSIONAL AFFILIATIONS

ASTM International (ASTM)
American Institute of Hydrology (AIH)
FAPG - The Florida Section of AIPG (FAPG-AIPG)
International Association for Mathematical Geology (IAMG)
National Ground Water Association (NGWA)
Southeastern Geological Society (SEGS)

RELATED PROJECTS

Groundwater Quality Source Evaluation for the Rainbow Springs Group, Marion County, Florida

WRA (Alfieri and Upchurch, 2017) devised a "surgical" approach to hydrogeologic evaluation and establishment of site-specific, nutrient-reduction target areas for the Southwest Florida Water Management District. The intent of the approach was to resolve water-quality problems by streamlining a spatially focused, cost-effective means for spring protection and source identification. WRA utilized District data, such as existing monitoring well and spring water-quality data, to identify the most probable primary source areas of nutrients and related recharge water from within the Rainbow Springs Group springshed through a karst hydrogeochemical analysis through principal component analyses (PCA) and factor analyses (FA). Areas impacted by direct, rapid, artificial recharge through drainage wells and sinkholes, as well as by slow, natural recharge into the Upper Floridan aquifer (UFA), were delineated within these "hot spots". Three factors which represent different chemical processes were identified and their relative areal impact determined. These processes are: (1) regional dissolution of the aquifer limestone and/or dolostone matrices and recharge of meteoric water; (2) recharge from local,

urban, and agricultural fertilizer runoff; and (3) recharge from local, urban, and agricultural soil amendment runoff. These results of this pilot program can be used develop strategies for cost-effective improvement of the quantity and quality of spring systems across the State of Florida.

City of Groveland Consumptive Use Permitting (2016-2018), Groveland, Florida

In late 2016, the City of Groveland, Florida, reached out to WRA to assist them in consolidating their consumptive use permits (CUPs), responding to their existing CUP District Requests for Additional Information (RAIs), and modifying the total permitted allocation to address future population growth for the City of Groveland. Mr. Alfieri, as Professional Geologist of Record, was responsible for the permit application and groundwater impact assessment modeling using the District's East-Central Florida Steady-State (ECFS). To offset regional MFL impacts, WRA also simulated a remedial solution whereby surface water will be moved from one location within the City limits to recharge the Apshawa Lakes. Based on the ECFS model results, this solution should create approximately 0.15-ft. of rebound in the upper Floridan aquifer (UFA) beneath the Apshawa Lakes, which is beneficial to many existing legal uses within the CFWI. The City's consolidated CUP will be issued by the District in February 2018 with a permitted increase to 2.5 MGD for household, commercial/industrial, landscape irrigation, water utility, and unaccounted type uses.

South Lake Regional Water Initiative - Alternative Water Supply Strategic Services, Lake County, Florida

The South Lake Regional Water Initiative (SLRWI) is made up of south Lake County communities including: the City of Clermont; the City of Groveland; the City of Mascotte; the City of Minneola; the Town of Montverde; Lake County Government; and Lake Utility Services, Inc. Mr. Alfieri, as Professional Geologist of Record, was responsible for: geologic and hydrogeologic review and interpretation; the hydrogeologic and groundwater economic evaluations of the existing water consumptive use permits; and the groundwater modeling of the potential alternative (lower Floridan aquifer) potable supply for south Lake County using the St. Johns River Water Management District's (SJRWMD) East-Central Florida (ECF) groundwater model, as well as comparing and evaluating the simulation results of the ECF-Transient (ECFT) model utilized by the Central Florida Water Initiative (CFWI) using the ECF model.

Potable Reuse Investigation for the St. Johns River Water Management District, Palatka, Florida

WRA was contracted to provide the St. Johns River Water Management District (SJRWMD) with a series of white papers to investigate the feasibility of implementing potable reuse projects within the District. The sources were located and then correlated with the varying types of geology that would support indirect potable reuse. Indirect methods potable reuse methods were identified and generally located across the district including rapid infiltration basins, wetland creation and recharge, aquifer storage and recovery and direct aquifer recharge. As Principal Hydrogeologist/ Principal Groundwater Modeler and Professional Geologist of Record, Mr. Alfieri, was responsible for the evaluation of the karst geology, hydrogeology, and cover materials within the SJRWMD; evaluating the feasibility of for indirect potable reuse recharge based on the geology; groundwater modeling of potential indirect potable recharge; and preparing a white paper detailing the findings of the study. He was also responsible for the evaluation of indirect potable reuse technologies utilizing the U.S. Geological Survey Peninsular Florida groundwater flow model (USGS MegaModel).

Domenick Tufariello, P.E.

Senior Project Manager

Mr. Tufariello is a Senior Engineer with over 20 years of multidiscipline experience in the water resources arena; including 3 years on the Hillsborough County stormwater modeling team, and 4 years working as "In-house" staff for the SWFWMD watershed management team. Domenick has served as a department manager and project manager for local, state and federal clients with specific expertise in regional stormwater management planning, watershed hydrology, design and management of stormwater facilities, wetland rehydration, site development, civil design, along with hydrologic and hydraulic modeling, flood risk management, preparation of He has worked on and managed a variety of multifaceted water resources projects from developing watershed management plans using the ArcHydro tool set to undertaking development and testing of the Green Ampt method for hydrology with the SWFWMD. Domenick is proficient in GIS, the ArcHydro tool set and accustom to programming scripts and developing integrated tools for parameterization of watersheds and database management. He has a strong numerical modeling background which includes HCSWMM, EPA SWMM 4.3-5.1, XPSWMM, ICPR3 w/PercPack, ICPR4, HEC2, HECRAS, TR-20 and TR-55, among others.

Florida Surface Water Models

EXPERIENCE

20 years of experience

EDUCATION

University of South Florida, B.S., Civil Engineering, 1996

REGISTRATIONS / CERTIFICATIONS

Florida Professional Engineer No. 56907

EXPERTISE

- HCSWMM;
- EPA SWMM 4.3-5.1
- XPSWMM
- ICPR3 w/PercPack
- ICPR4
- HEC2
- HECRAS
- TR-20 and TR-55

PROFESSIONAL AFFILIATIONS

American Water Resource Association (AWRA)
American Society of Civil Engineers (ASCE)

RELATED PROJECTS

Lead Engineer; Various Watershed Reviews, SWFWMD

Project Engineer responsible for the reviews and comment geodatabase of various watersheds over the past five years at the SWFWMD (i.e., Cypress Creek, Brooker Creek, Anclote, Duck Slough, Bystre Lake, Cardinal Lane, etc.). The duties include generating comment geodatabases based on GIS (ArcHydro), and Modeling techniques (ICPR, and SWMM). The reviews included the development of custom routines and scripts to review and verify model and GIS results.

Project Manager of the Professional Engineering and Scientific Consultant Staffing Services Contract for the SWFWMD

Responsible for managing 15 full time equivalent employees for the SWFWMD on over 38 successful work orders. Based in the Brooksville service office, the staffing contract employees perform engineering, scientific, technical, public outreach and other supportive assignments. These include: but are not limited to, watershed inventory, ERP / data collection, database analysis, watershed modeling and parameterization, project management, Arc Hydro, programming, enforcement, research, and recommendations to District staff on a full-time and part-time basis,

depending on the nature and volume of assignments. The contract value was approximately 5 million dollars.

Engineer-of-Record; Clermont Chain of Lakes Basin Study, Lake County Florida

Responsible for all aspects of the watershed management plan; Tasks include basin delineation, and data assembly through the Watershed Evaluation in GWIS for ICPR4; a conditions assessment analysis, for water quantity, quality, and structure operations. H &H modeling is consistent with the SWFWMD's Watershed Management workflow and Guidelines and Specifications. ICPR4, ArcGIS for GWIS(ICPR4).

Project Manager/Engineer of Record; Willow Sink Watershed Management Plan, SWFWMD

Responsible for preparing watershed parameters, analyzing and mapping floodplain delineation; developing the modeling techniques used to represent a Hernando County watershed. The watershed management plan was reviewed and accepted by the SWFWMD. The watershed was parameterized with the ESRI ArcHydro tools, and version 3, service pack 6 of ICPR with PercPack. Directed and performed the collection field data, LIDAR assessment, DEM generation, land use at the parcel level, updates for new ERP information, DEM modifications, presentations, and reports. The Green Ampt methodology was used as part of this project. The Willow Sink WMP, serves as the "Example" watershed provided to consultants.

Project Manager; Bystre Lake Watershed Review and Modification, Southwest Florida Water Management District (SWFWMD)

Responsible for reviewing watershed parameters, analyzing the contested floodplain determination, and investigating the modeling techniques used to represent a Hernando County watershed. The watershed management plan was reviewed and revised based on comments generated through this assignment on the Professional Engineering and Environmental (E&E) contract for the SWFWMD. Additional field data was collected, coordination with contesting property owners was performed, and the model was revised based on the ArcHydro tool set, custom review scripts and different modeling techniques. The review resulted in modifications to the watershed model as well as the design and construction observation of an overflow structure.

Project Manager; City of Oldsmar Watershed Management Plan, ICPR to SWMM model conversion, SWFWMD

Responsible for conversion of ICPR2 model to ICPR3, SWMM 4.31, SWMM 5, and SWMM5.1 for the prime consultant CH2MHill. The duties include generating comments based on the FEMA and SWFWMD guidance documents and guidelines and specifications. Comments were generated based on both GIS, and historic modeling techniques Custom scripts were used to develop the GIS and model comments.

Project Manager; Trout Creek Peer Review, SWFWMD

Responsible for the overall peer review and comment geodatabase for the Trout Creek watershed model in Pasco County, Florida. The duties include generating comments based on the FEMA and SWFWMD guidance documents and guidelines and specifications. Comments were generated based on both GIS, and modeling techniques errors and omissions. Custom scripts were used to develop the GIS and model comments. The floodplain was also verified through a custom mapping routine.