Florida's Warmest Welcome

CITY OF POMPANO BEACH
REQUEST FOR LETTERS OF INTEREST
E-23-20

CONTINUING CONTRACT FOR ENGINEERING SERVICES FOR WATER AND REUSE TREATMENT PLANT PROJECTS

RLI OPENING: August 10, 2020, 2:00 P.M.
PURCHASING OFFICE
1190 N.E. 3RD AVENUE, BUILDING C (Front)
POMPANO BEACH, FLORIDA 33060

July 8, 2020

CITY OF POMPANO BEACH, FLORIDA

REQUEST FOR LETTERS OF INTEREST (RLI)
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CONTINUING CONTRACT FOR ENGINEERING SERVICES FOR WATER AND REUSE TREATMENT PLANT PROJECTS

Pursuant to Florida Statutes Chapter 287.055 "Consultants' Competitive Negotiation Act" the City of Pompano Beach invites qualified engineering firms to submit Letters of Interest, qualifications and experience for consideration to provide Professional Engineering Consulting services to the City on a continuing as-needed basis.

The City will receive sealed proposals until **2:00 p.m. (local), August 10, 2020.** Proposals must be submitted electronically through the eBid System on or before the due date/time stated above. Any proposal received after the due date and time specified, will not be considered. Any uncertainty regarding the time a proposal is received will be resolved against the Proposer.

Proposer must be registered on the City's eBid System in order to view the solicitation documents and respond to this solicitation. The complete solicitation document can be downloaded for free from the eBid System as a pdf at: https://pompanobeachfl.ionwave.net. The City is not responsible for the accuracy or completeness of any documentation the Proposer receives from any source other than from the eBid System. Proposer is solely responsible for downloading all required documents. A list of proposers will be read aloud in a public forum.

Introduction

The City intends to issue multiple contracts to engineering firms to provide continuing professional services to the City for various Water and Reuse Treatment Plant projects. Professional services under this contract will be restricted to those required for any project for which construction costs will not exceed $4 million, and for any study activity for which fees will not exceed $500,000

1. **The types of projects to be undertaken may include, but are not limited to**

   - Reuse Water Treatment Plant Expansion Projects
   - Reuse Water Treatment Plant Modification and/or Enhancement Projects
   - Water Treatment Plant Expansion Projects
   - Water Treatment Plant Modification and/or Enhancement Projects
   - The City's approved Capital Improvement Program maybe found here http://pompanobeachfl.gov/pages/department_directory/budget/budget.html.php

2. **The scope of services may include, but is not limited to, the following;**

   - Prepare studies and make recommendations on methods of operation and/or treatment.

- Prepare preliminary design reports and/or design alternative recommendations. This may include various types of utility modeling, surveying and field data analysis.
- Prepare all required bidding/construction documents for projects. This will include survey preparations, design plan preparations, technical specification preparations and cost estimate preparations. Attendance at all required pre-design, design, bidding and bid award meetings is required.
- Attend pre-bid conference, prepare possible bid addendums for plan revisions. Assist in making bid award recommendations for contracting/construction services.
- Prepare all required permit applications and submittal packages as required for permit issuance of all agency permits (i.e. State, County and City).
- Provide construction engineering/management services for projects. Services during construction may include shop drawing/contractor submittal reviews and approvals, inspection and approval of project improvements, possible plan revisions and review and approval of contractor pay applications.
- Provide project close-out services. This may include preliminary and final acceptance of projects, preparation and approval of punch list items and project certification as required to all permitting agencies.
- Firms must have previous experience in municipal water and reuse treatment plant projects and must be licensed to practice Professional Engineering in the State of Florida, Florida State Statute 471, by the Board of Professional Regulation.

3 Tasks/Deliverables

Tasks and deliverables will be determined per project. Each project shall require a signed Work Authorization (WA) form from the awarded firm to be provided to the City. Forms shall be completed in its entirety and include the agreed upon scope, tasks, schedule, cost, and deliverables for the project Consultant will be required to provide all applicable insurance requirements.

4. Term of Contract

The contracts will be for a term of five (5) years, commencing upon award by the appropriate City officials.

5. Local Business Program

On March 13, 2018, the City Commission approved Ordinance 2018-46, establishing a Local Business Program, a policy to increase the participation of City of Pompano Beach businesses in the City's procurement process.

For purposes of this solicitation, “Local Business” will be defined as follows:

1. **TIER 1 LOCAL VENDOR.** POMPANO BEACH BUSINESS EMPLOYING POMPANO BEACH RESIDENTS. A business entity which has maintained a permanent place of business within the city limits and maintains a staffing level, within this local office, of at least ten percent who are residents of the City of Pompano Beach or includes

subcontracting commitments to Local Vendors Subcontractors for at least ten percent of the contract value. The permanent place of business may not be a post office box. The business must be located in a non-residential zone, and must actually distribute goods or services from that location. The business must be staffed with full-time employees within the limits of the city. In addition, the business must have a current business tax receipt from the City of Pompano Beach for a minimum of one year prior to the date of issuance of a bid or proposal solicitation.

2. **TIER 2 LOCAL VENDOR.** BROWARD COUNTY BUSINESS EMPLOYING POMPANO BEACH RESIDENTS OR UTILIZING LOCAL VENDOR SUBCONTRACTORS. A business entity which has maintained a permanent place of business within Broward County and maintains a staffing level, within this local office, of at least 15% who are residents of the City of Pompano Beach or includes subcontracting commitments to Local Vendors Subcontractors for at least 20% of the contract value. The permanent place of business may not be a post office box. The business must be located in a non- residential zone, and must actually distribute goods or services from that location. The business must be staffed with full-time employees within the limits of the city. In addition, the business must have a current business tax receipt from the respective Broward County municipality for a minimum of one year prior to the date of issuance of a bid or proposal solicitation.

3. **LOCAL VENDOR SUBCONTRACTOR.** POMPANO BEACH BUSINESS. A business entity which has maintained a permanent place of business within the city limits of the City of Pompano Beach. The permanent place of business may not be a post office box. The business must be located in a non-residential zone, and must actually distribute goods or services from that location. The business must be staffed with full-time employees within the limits of the city. In addition, the business must have a current business tax receipt from the City of Pompano Beach for a minimum of one year prior to the date of issuance of a bid or proposal solicitation.

You can view the list of City businesses that have a current Business Tax Receipt on the City's website, and locate local firms that are available to perform the work required by the bid specifications. The business information, sorted by business use classification, is posted on the webpage for the Business Tax Receipt Division: www.pompanobeachfl.gov by selecting the Pompano Beach Business Directory in the Shop Pompano! section.

The City of Pompano Beach is **strongly committed** to insuring the participation of City of Pompano Beach Businesses as contractors and subcontractors for the procurement of goods and services, including labor, materials and equipment. Proposers are required to participate in the City of Pompano Beach's Local Business Program by including, as part of their package, the Local Business Participation Form (Exhibit A,) listing the local businesses that will be used on the contract, and the Letter of Intent Form (Exhibit B) from each local business that will participate in the contract.

Please note that, while no goals have been established for this solicitation, the City encourages Local Business participation in *all* of its procurements.

If a Prime Contractor/Vendor is not able to achieve the level of goal attainment of the contract, the Prime Vendor will be requested to demonstrate and document that good faith efforts were made to achieve the goal by providing the Local Business Unavailability Form (Exhibit C), listing firms that were contacted but not available, and the Good Faith Effort Report (Exhibit D), describing the efforts made to include local business participation in the contract. This documentation shall be provided to the City Commission for acceptance.

The awarded proposer will be required to submit "Local Business Subcontractor Utilization Reports" during projects and after projects have been completed. The reports will be submitted to the assigned City project manager of the project. The Local Business Subcontractor Utilization Report template and instructions have been included in the bid document.

Failure to meet Local Vendor Goal commitments will result in "unsatisfactory" compliance rating. Unsatisfactory ratings may impact award of future projects if a sanction is imposed by the City Commission.

The city shall award a Local Vendor preference based upon vendors, contractors, or subcontractors who are local with a preference as follows:

1. For evaluation purposes, the Tier 1 and Tier 2 businesses shall be a criterion for award in this Solicitation. No business may qualify for more than one tier level.

2. For evaluation purposes, local vendors shall receive the following preferences:

   a. Tier 1 business as defined by this subsection shall be granted a preference in the amount of five percent of total score.

   b. Tier 2 business as defined by this subsection shall be granted a preference in the amount of two and one-half percent of total score.

3. It is the responsibility of the awarded vendor/contractor to comply with all Tier 1 and Tier 2 guidelines. The awarded vendor/contractor must ensure that all requirements are met before execution of a contract.

6. Required Proposal Submittal

Submission/Format Requirements

Sealed proposals shall be submitted electronically through the eBid System on or before the due date/time stated above. Proposer shall upload response as one (1) file to the eBid System. The file size for uploads is limited to 250 MB. If the file size exceeds 250 MB the response must be split and uploaded as two (2) separate files.

Information to be included in the proposal: In order to maintain comparability and expedite the review process, it is required that proposals be organized in the manner specified below, with the sections clearly labeled:

Title page:

Show the project name and number, the name of the Proposer's firm, address, telephone number, name of contact person and the date.

Table of Contents:
Include a clear identification of the material by section and by page.

Letter of Transmittal:
Briefly state the Proposer's understanding of the project and express a positive commitment to provide the services described herein. State the name(s) of the person(s) who will be authorized to make representations for the Proposer, their title(s), office and E-mail addresses and telephone numbers. Please limit this section to two pages.

Technical Approach:
Firms or teams shall submit their technical approach to the tasks described in the scope, including details of how each phase of the project would be completed, and how their firm proposes to maintain time schedules and cost controls.

Schedule:
Proposer shall provide a timeline that highlights proposed tasks that will meet all applicable deadlines.

References:
References for past projects in the tri-county area (Broward, Palm Beach, and Miami-Dade.) Describe the scope of each project in physical terms and by cost, describe the respondent's responsibilities, and provide the contact information (name, email, telephone number) of an individual in a position of responsibility who can attest to respondent's activities in relation to the project.

List any prior projects performed for the City of Pompano Beach.

Project Team Form:
Submit a completed "Project Team" form. The purpose of this form is to identify the key members of your team, including any specialty subconsultants.

Organizational Chart:
Specifically identify the management plan (if needed) and provide an organizational chart for the team. The proposer must describe at a minimum, the basic approach to these projects, to include reporting hierarchy of staff and sub-consultants, clarify the individual(s) responsible for the co-ordination of separate components of the scope of services.

Statement of Skills and Experience of Project Team:
Describe the experience of the entire project team as it relates to the types of projects described in the Scope section of this solicitation. Include the experience of the prime consultants as well as other members of the project team; i.e., additional personnel, sub-consultants, branch office, team members, and other resources anticipated to be utilized for this project. Name specific projects (successfully completed within the past five years) where the team members have performed similar projects previously.

Resumes of Key Personnel
Include resumes for key personnel for prime and subconsultants.

Office Locations:
Identify the location of the office from which services will be rendered, and the number of professional and administrative staff at the prime office location. Also identify the location of office(s) of the prime and/or sub consultants that may be utilized to support any or all of the professional services listed above and the number of professional and administrative staff at the prime office location.

If firms are situated outside the local area, (Broward, Palm Beach, and Miami-Dade counties) include a brief statement as to whether or not the firm will arrange for a local office during the term of the contract, if necessary.

Local Businesses:
Completed Local Business program forms, Exhibits A-D.
NOTE: Form B must be signed by a representative of the subcontractor, NOT of the Prime.

Litigation:
Disclose any litigation within the past five (5) years arising out your firm's performance, including status/outcome.

City Forms:
The Proposer Information Page Form and any other required forms must be completed and submitted electronically through the City's eBid System. The City reserves the right to request additional information to ensure the proposer is financially solvent and has sufficient financial resources to perform the contract and shall provide proof thereof of its financial solvency. The City may as at its sole discretion ask for additional proof of financial solvency, including additional documents post proposal opening, and prior to evaluation that demonstrates the Proposer's ability to perform the resulting contract and provide the required materials and/or services.

Reviewed and Audited Financial Statements:

Proposers shall be financially solvent and appropriately capitalized to be able to service the City for the duration of the contract. Proposers shall provide a complete financial statement of the firm's most recent audited financial statements, indicating organization's financial condition. Must be uploaded to the Response Attachments tab in the eBid System as a separate file titled "Financial Statements" and marked "CONFIDENTIAL."

Financial statements provided shall not be older than twelve 12) months prior to the date of filing this solicitation response. The financial statements are to be reviewed and submitted with any accompanying notes and supplemental information. The City of Pompano Beach reserve the right to reject financial statements in which the financial condition shown is of a date twelve (12) months or more prior to the date of submittals.

The City is a public agency subject to Chapter 119, Florida's Public Records Law and is required to provide the public with access to public records, however, financial statements that are required as submittals to prequalify for a solicitation will be exempt from public disclosure.

The City reserves the right to request additional information to ensure the proposer is financially solvent and has sufficient financial resources to perform the contract and shall provide proof thereof of its financial solvency. The City may as at its sole discretion ask for

additional proof of financial solvency, including additional documents post proposal opening, and prior to evaluation that demonstrates the Proposer's ability to perform the resulting contract and provide the required materials and/or services.

A combination of two (2) or more of the following may substitute for audited financial statements:

1) Bank letters/statements for the past 3 months
2) Balance sheet, profit and loss statement, cash flow report
3) IRS returns for the last 2 years
4) Letter from CPA showing profits and loss statements (certified)

7. Insurance

The insurance described herein reflects the insurance requirements deemed necessary for this contract by the City. It is not necessary to have this level of insurance in effect at the time of submittal, but certificates indicating that the insurance is currently carried or a letter from the Carrier indicating upgrade ability will speed the review process to determine the most qualified Proposer.

The successful Proposer(s) shall not commence operations until certification or proof of insurance, detailing terms and provisions of coverage, has been received and approved by the City of Pompano Beach Risk Manager.

The following insurance coverage shall be required.

a. Worker's Compensation Insurance covering all employees and providing benefits as required by Florida Statute, Chapter 440, regardless of the size of the company (number of employees). The Contractor further agrees to be responsible for employment, control and conduct of its employees and for any injury sustained by such employees in the course of their employment.

b. Liability Insurance

1) Naming the City of Pompano Beach as an additional insured, on General Liability Insurance only, in connection with work being done under this contract.

2) Such Liability insurance shall include the following checked types of insurance and indicated minimum policy limits.

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LIMITS OF LIABILITY

	Type of Insurance		each occurrence	aggregate
GENERAL LIABILITY: ***MINIMUM $1,000,000 per OCCURRENCE/$1,000,000 AGGREGATE***				
	* Policy to be written on a claims incurred basis			
XX	comprehensive form			
XX	premises - operations	bodily injury		
__	explosion & collapse hazard	property damage		
__	underground hazard	_____		
__	products/completed operations hazard	bodily injury and		
XX	contractual insurance	property damage		
XX	broad form property damage	combined		
		_____		
XX	independent contractors			
XX	personal injury	personal injury		
AUTOMOBILE LIABILITY: ***MINIMUM $1,000,000 per OCCURRENCE/$1,000,000 AGGREGATE***				
		bodily injury (each person)		
XX	comprehensive form	bodily injury (each accident)	_____	_____
XX	owned	property damage	_____	_____
XX	hired	bodily injury and		
XX	non-owned	property damage combined		
REAL & PERSONAL PROPERTY				
XX	comprehensive form	Consultant must show proof they have this coverage.		
EXCESS LIABILITY				
XX	umbrella form	bodily injury and property damage		
XX	other than umbrella	combined	$2,000,000.	$2,000,000.
XX	**PROFESSIONAL LIABILITY**	$2,000,000.	$2,000,000.	
	* Policy to be written on a claims made basis			

The certification or proof of insurance must contain a provision for notification to the City, and the City's contracted law enforcement provider if applicable, thirty (30) days in advance of any material change in coverage or cancellation.

The successful Proposer shall furnish to the City the certification or proof of insurance required by the provisions set forth above, within ten (10) days after notification of award of contract.

8. Selection/Evaluation Process

A Selection/Evaluation Committee will be appointed to select the most qualified firm(s). The Selection/Evaluation Committee will present their findings to the City Commission.

The Committee will rank responses based upon the following criteria.

	Criteria	Point Range
1.	Prior experience of the firm with projects of similar size and complexity: a. Number of similar projects b. Complexity of similar projects c. References from past projects performed by the firm d. Previous projects performed for the City (provide description) e. Litigation within the past 5 years arising out of firm's performance (list, describe outcome)	0-45 points
2.	Qualifications of personnel including sub consultants: a. Organizational chart for project b. Number of technical staff c. Qualifications of technical staff: (1) Number of licensed staff (2) Education of staff (3) Experience of staff on similar projects	0-35 points
3.	Proximity of the nearest office to the project location: a. Location b. Number of staff at the nearest office	0-10 points
4.	Is the firm a certified minority business enterprise as defined by the Florida Small and Minority Business Assistance Act of 1985? (Certification of any sub-contractors should also be included with the response.)	0-10 points

Value of Work Previously Awarded to Firm (Tie-breaker) - In the event of a tie, the firm with the lowest value of work as a prime contractor on City of Pompano Beach projects within the last five years will receive the higher ranking, the firm with the next lowest value of work shall receive the next highest ranking, and so on. The analysis of past work will be based on the City's Purchase Order and payment records.

The Committee has the option to use the above criteria for the initial ranking to short-list Proposers and to use an ordinal ranking system to score short-listed Proposers following

presentations (if deemed necessary) with a score of "1" assigned to the short-listed Proposer deemed most qualified by the Committee.

Each firm should submit documentation that evidences the firm's capability to provide the services required for the Committee's review for short listing purposes. After an initial review of the Proposals, the City may invite Proposers for an interview to discuss the proposal and meet firm representatives, particularly key personnel who would be assigned to the project. Should interviews be deemed necessary, it is understood that the City shall incur no costs as a result of this interview, nor bear any obligation in further consideration of the submittal.

When more than three responses are received, the committee shall furnish the City Commission (for their approval) a listing, in ranked order, of no fewer than three firms deemed to be the most highly qualified to perform the service. If three or less firms respond to the RLI, the list will contain the ranking of all responses.

The City Commission has the authority to (including, but not limited to); approve the recommendation; reject the recommendation and direct staff to re-advertise the solicitation; or, review the responses themselves and/or request oral presentations and determine a ranking order that may be the same or different from what was originally presented to the City Commission.

9. Hold Harmless and Indemnification

Proposer covenants and agrees that it will indemnify and hold harmless the City and all of its officers, agents, and employees from any claim, loss, damage, cost, charge or expense arising out of any act, action, neglect or omission by the Proposer, whether direct or indirect, or whether to any person or property to which the City or said parties may be subject, except that neither the Proposer nor any of its subcontractors will be liable under this section for damages arising out of injury or damage to persons or property directly caused by or resulting from the sole negligence of the City or any of its officers, agents or employees.

10. Retention of Records and Right to Access

The selected firm shall maintain during the term of the contract all books of account, receipt invoices, reports and records in accordance with generally accepted accounting practices and standards. The form of all records and reports shall be subject to the approval of the City's Internal Auditor. The selected firm must comply with the Internal Auditor's recommendation for changes, additions, or deletions. The City's Internal Auditor must be permitted during normal business hours to audit and examine the books of account, reports, and records relating to this contract. The selected firm shall maintain and make available such records and files for the duration of the contract and retain them until the expiration of three years after final payment under the contract.

11. Communications

No negotiations, decisions, or actions shall be initiated or executed by the firm as a result of any discussions with any City employee. Only those communications, which are in writing from the City, may be considered as a duly authorized expression on behalf of the

City. In addition, only communications from firms that are signed and in writing will be recognized by the City as duly authorized expressions on behalf of firms.

12. No Discrimination

There shall be no discrimination as to race, sex, color, age, religion, or national origin in the operations conducted under any contract with the City.

13. Independent Contractor

The selected firm will conduct business as an independent contractor under the terms of this contract. Personnel services provided by the firm shall be by employees of the firm and subject to supervision by the firm, and not as officers, employees, or agents of the City. Personnel policies, tax responsibilities, social security and health insurance, employee benefits, purchasing policies and other similar administrative procedures applicable to services rendered under this agreement shall be those of the firm.

14. Staff Assignment

The City of Pompano Beach reserves the right to approve or reject, for any reasons, Proposer's staff assigned to this project at any time. Background checks may be required.

15. Contract Terms

The contract resulting from this RLI shall include, but not be limited to the following terms:

The contract shall include as a minimum, the entirety of this RLI document, together with the successful Proposer's proposal. Contract shall be prepared by the City of Pompano Beach City Attorney.

If the City of Pompano Beach defends any claim, demand, cause of action, or lawsuit arising out of any act, action, negligent acts or negligent omissions, or willful misconduct of the contractor, its employees, agents or servants during the performance of the contract, whether directly or indirectly, contractor agrees to reimburse the City of Pompano Beach for all expenses, attorney's fees, and court costs incurred in defending such claim, cause of action or lawsuit.

16. Waiver

It is agreed that no waiver or modification of the contract resulting from this RLI, or of any covenant, condition or limitation contained in it shall be valid unless it is in writing and duly executed by the party to be charged with it, and that no evidence of any waiver or modification shall be offered or received in evidence in any proceeding, arbitration, or litigation between the parties arising out of or affecting this contract, or the right or obligations of any party under it, unless such waiver or modification is in writing, duly executed as above. The parties agree that the provisions of this paragraph may not be waived except by a duly executed writing.

17. Survivorship Rights

This contract resulting from this RLI shall be binding on and inure to the benefit of the respective parties and their executors, administrators, heirs, personal representative, successors and assigns.

18. Termination

The contract resulting from this RLI may be terminated by the City of Pompano Beach without cause upon providing contractor with a least sixty (60) days prior written notice.

Should either party fail to perform any of its obligations under the contract resulting from this RLI for a period of thirty (30) days after receipt of written notice of such failure, the non-defaulting part will have the right to terminate the contract immediately upon delivery of written notice to the defaulting part of its election to do so. The foregoing rights of termination are in addition to any other rights and remedies that such party may have.

19. Manner of Performance

Proposer agrees to perform its duties and obligations under the contract resulting from this RLI in a professional manner and in accordance with all applicable local, federal and state laws, rules and regulations.

Proposer agrees that the services provided under the contract resulting from this RLI shall be provided by employees that are educated, trained and experienced, certified and licensed in all areas encompassed within their designated duties. Proposer agrees to furnish the City of Pompano Beach with all documentation, certification, authorization, license, permit, or registration currently required by applicable laws or rules and regulations. Proposer further certifies that it and its employees are now in and will maintain good standing with such governmental agencies and that it and its employees will keep all license, permits, registration, authorization or certification required by applicable laws or regulations in full force and effect during the term of this contract. Failure of Proposer to comply with this paragraph shall constitute a material breach of contract.

20. Acceptance Period

Proposals submitted in response to this RLI must be valid for a period no less than ninety (90) days from the closing date of this solicitation.

21. RLI Conditions and Provisions

The proposal must be submitted to the City on or before the time and date stated herein. All Proposers, by submission of a proposal, shall agree to comply with all of the conditions, requirements and instructions of this RLI as stated or implied herein. All proposals and supporting materials submitted will become the property of the City.

Exceptions or deviations to this solicitation may not be added after the submittal date.

All Proposers are required to provide all information requested in this RLI. Failure to do so may result in disqualification of the proposal.

The City reserves the right to postpone or cancel this RLI, or reject all proposals, if in its sole discretion it deems it to be in the best interest of the City to do so.

The City reserves the right to waive any technical or formal errors or omissions and to reject all proposals, or to award contract for the items herein, in part or whole, if it is determined to be in the best interests of the City to do so.

The City shall not be liable for any costs incurred by the Proposer in the preparation of proposals or for any work performed in connection therein.

22. Standard Provisions

a. Governing Law

Any agreement resulting from this RLI shall be governed by the laws of the State of Florida, and the venue for any legal action relating to such agreement will be in Broward County, Florida.

b. Licenses

In order to perform public work, the successful Proposer shall:
Be licensed to do business in Florida, if an entity, and hold or obtain such Contractor' and Business Licenses if required by State Statutes or local ordinances.

c. Conflict Of Interest

For purposes of determining any possible conflict of interest, each Proposer must disclose if any Elected Official, Appointed Official, or City Employee is also an owner, corporate officer, or an employee of the firm. If any Elected Official, Appointed Official, or City Employee is an owner, corporate officer, or an employee, the Proposer must file a statement with the Broward County Supervisor of Elections pursuant to §112.313, Florida Statutes.

d. Drug Free Workplace

The selected firm(s) will be required to verify they will operate a "Drug Free Workplace" as set forth in Florida Statute, 287.087.

e. Public Entity Crimes

A person or affiliate who has been placed on the convicted vendor list following a conviction for public entity crime may not submit a proposal on a contract to provide any goods or services to a public entity, may not submit a proposal on a contract with a public entity for the construction or repair of a public building or public work, may not submit proposals on leases of real property to public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Florida Statute, Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

f. Patent Fees, Royalties, And Licenses

If the selected Proposer requires or desires to use any design, trademark, device, material or process covered by letters of patent or copyright, the selected Proposer and his surety shall indemnify and hold harmless the City from any and all claims for infringement by reason of the use of any such patented design, device, trademark, copyright, material or process in connection with the work agreed to be performed and shall indemnify the City from any cost, expense, royalty or damage which the City may be obligated to pay by reason of any infringement at any time during or after completion of the work.

g. Familiarity With Laws

It is assumed the selected firm(s) will be familiar with all federal, state and local laws, ordinances, rules and regulations that may affect its services pursuant to this RLI. Ignorance on the part of the firm will in no way relieve the firm from responsibility.

h. Withdrawal Of Proposals

A firm may withdraw its proposal without prejudice no later than the advertised deadline for submission of proposals by written communication to the General Services Department, 1190 N.E. 3rd Avenue, Building C, Pompano Beach, Florida 33060.

i. Composition Of Project Team

Firms are required to commit that the principals and personnel named in the proposal will perform the services throughout the contractual term unless otherwise provided for by way of a negotiated contract or written amendment to same executed by both parties. No diversion or substitution of principals or personnel will be allowed unless a written request that sets forth the qualifications and experience of the proposed replacement(s) is submitted to and approved by the City in writing.

j. Invoicing/Payment

All invoices should be sent to City of Pompano Beach, Accounts Payable, P.O. Drawer 1300, Pompano Beach, Florida, 33061. In accordance with Florida Statutes, Chapter 218, payment will be made within 45 days after receipt of a proper invoice.

k. Public Records

1. The City of Pompano Beach is a public agency subject to Chapter 119, Florida Statutes. The Contractor shall comply with Florida's Public Records Law. Specifically, the Contractor shall:

    a. Keep and maintain public records that ordinarily and necessarily would be required by the City in order to perform the service;

    b. Provide the public with access to such public records on the same terms and conditions that the City would provide the records and at a cost that

does not exceed that provided in chapter 119, Fla. Stat., or as otherwise provided by law;

c. Ensure that public records that are exempt or that are confidential and exempt from public record requirements are not disclosed except as authorized by law; and

d. Meet all requirements for retaining public records and transfer to the City, at no cost, all public records in possession of the contractor upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt. All records stored electronically must be provided to the City in a format that is compatible with the information technology systems of the agency.

2. The failure of Contractor to comply with the provisions set forth in this Article shall constitute a Default and Breach of this Agreement and the City shall enforce the Default in accordance with the provisions set forth herein.

23. Questions and Communication

All questions regarding the RLI are to be submitted in writing to the Purchasing Office, 1190 N.E. 3rd Avenue, Building C (Front), Pompano Beach, Florida 33060, fax (954) 786-4168, or email purchasing@copbfl.com. All questions must include the inquiring firm's name, address, telephone number and RLI name and number. Questions must be received at least seven (7) calendar days before the scheduled solicitation opening. Oral and other interpretations or clarifications will be without legal effect. Any addendum necessary to answer questions will be posted to the City's website, and it is the Proposer's responsibility to obtain all addenda before submitting a response to the solicitation.

24. Addenda

The issuance of a written addendum is the only official method whereby interpretation, clarification, or additional information can be given. If any addenda are issued to this solicitation the City will attempt to notify all known prospective Proposers, however, it shall be the responsibility of each Proposer, prior to submitting their response, to contact the City Purchasing Office at (954) 786-4098 to determine if addenda were issued and to make such addenda a part of their proposal.

E-23-20
Carollo Engineers Inc.
Supplier Response

Event Information

Number: E-23-20
Title: Continuing Contracts for Engineering Services for Water and Reuse Treatment Plant Projects
Type: Request for Letters of Interest
Issue Date: 7/8/2020
Deadline: 8/10/2020 02:00 PM (ET)
Notes: Pursuant to Florida Statutes Chapter 287.055 "Consultants' Competitive Negotiation Act" the City of Pompano Beach invites qualified engineering firms to submit Letters of Interest, qualifications and experience for consideration to provide Professional Engineering Consulting services to the City on a continuing as-needed basis.

The City will receive sealed proposals until **2:00 p.m. (local), August 10, 2020.** Proposals must be submitted electronically through the eBid System on or before the due date/time stated above. Any proposal received after the due date and time specified, will not be considered. Any uncertainty regarding the time a proposal is received will be resolved against the Proposer.

Proposer must be registered on the City's eBid System in order to view the solicitation documents and respond to this solicitation. The complete solicitation document can be downloaded for free from the eBid System as a pdf at: https://pompanobeachfl.ionwave.net. The

City is not responsible for the accuracy or completeness of any documentation the Proposer receives from any source other than from the eBid System. Proposer is solely responsible for downloading all required documents. A list of proposers will be read aloud in a public forum.

Contact Information

Contact: Jeff English
Address: Purchasing
1190 NE 3rd Avenue
Building C
Pompano Beach, FL 33060
Phone: (954) 786-4098
Fax: (954) 786-4168
Email: purchasing@copbfl.com

Carollo Engineers Inc. Information

Contact: Elizabeth Fujikawa
Address: 2728 North University Drive
Coral Springs, FL 33065
Phone: (954) 837-0030
Email: efujikawa@carollo.com

By submitting this Response I affirm I have received, read and agree to the all terms and conditions as set forth herein. I hereby recognize and agree that upon execution by an authorized officer of the City of Pompano Beach, this Response, together with all documents prepared by or on behalf of the City of Pompano Beach for this solicitation, and the resulting Contract shall become a binding agreement between the parties for the products and services to be provided in accordance with the terms and conditions set forth herein. I further affirm that all information and documentation contained within this response to be true and correct, and that I have the legal authority to submit this response on behalf of the named Supplier (Offeror).

Elizabeth Fujikawa
Signature

efujikawa@carollo.com
Email

Submitted at 8/10/2020 8:28:28 AM

Requested Attachments

Proposal PompanoBeachConstSvcsW_Reuse-Q0820.pdf

Electronic version of proposal must be uploaded to the Response Attachments tab. The file size for uploads is limited to 250 MB. If the file size exceeds 250 MB the response must be split and uploaded as two (2) separate files.

Financial Statment Confidential - 2019 Carollo Eng Fin Stmt (FINAL 04.29.20).pdf

Will remain confidential pursuant to section 119.071 of the State of Florida Statutes.

Tier 1/ Tier 2 Local Business Form T1_T2_Form.pdf

To comply with the City's Local Business Program as a Tier-1 or Tier-2 vendor, you must complete this form and upload it to the Response Attachments tab.

Local Business Program Forms Local Business Program Forms.pdf

These forms are to be completed and uploaded to the Response Attachments tab. Online Only

Proposer Information Page Proposer Information Page Form.pdf

Proposer Information Page Form is to be included in your proposal that must be uploaded to the Response Attachments Tab.

Minority Business Enterprise Participation Form Minority Business Enterprise Participation Form - RLI.pdf

If your firm or any sub-consultant is a certified minority business enterprise this form must be completed and included with your proposal. If any members of your team are a certified Minority Business Enterprise copies of their certifications must be included in your submittal.

Project Team Form Project Team Form.pdf

Project Team Form is to be included in your proposal that must be uploaded to the Response Attachments Tab.

Bid Attributes

1 Drug-Free Workplace

Whenever two or more bids which are equal with respect to price, quality, and service are received for the procurement of commodities or contractual service, a bid received from a business that certifies that it has implemented a Drug-free Workplace Program shall be given preference in the award process. If bidder's company has a Drug-free Workplace Program as outlined in General Conditions, section 32., indicate that by selecting yes in the drop down menu.

Yes

2 Conflict of Interest

For purposes of determining any possible conflict of interest, all bidders must disclose if any City of Pompano Beach employee is also an owner, corporate officer, or employee of their business. Indicate either "Yes" (a City employee is also associated with your business), or "No". (Note: If answer is "Yes", you must file a statement with the Supervisor of Elections, pursuant to Florida Statutes 112.313.)Indicate yes or no below with the drop down menu.

No

3 Local Business Participation Percentage

If you have indicated local business participation on the Local Business Participation Form Exhibit A enter the percentage of the contract that will be performed by local Pompano Beach businesses.

No response

4 Terms & Conditions

Check the box indicating you agree to the terms and conditions of this solicitation.

Agree

5 Acknowledgement of Addenda

Check this box to acknowledge that you have reviewed all addenda issued for this solicitation.

Yes

COMPLETE THE PROPOSER INFORMATION FORM ON THE ATTACHMENTS TAB IN THE EBID SYSTEM. PROPOSERS ARE TO COMPLETE FORM IN ITS ENTIRITY AND INCLUDE THE FORM IN YOUR PROPOSAL THAT MUST BE UPLOADED TO THE RESPONSE ATTACHMENTS TAB FOR THE RFP IN THE EBID SYSTEM.

PROPOSER INFORMATION PAGE

RFP E-23-20 (number), Continuing Contract for Engineering Services For Water and Reuse Treatment Plant Projects (RFP name)

To: The City of Pompano Beach, Florida

The below named company hereby agrees to furnish the proposed services under the terms stated subject to all instructions, terms, conditions, specifications, addenda, legal advertisement, and conditions contained in the RFP. I have read the RFP and all attachments, including the specifications, and fully understand what is required. By submitting this proposal, I will accept a contract if approved by the City and such acceptance covers all terms, conditions, and specifications of this proposal.

Proposal submitted by:

Name (printed) Elizabeth Fujikawa, PE, BCEE, LEED AP Title Vice President

Company (Legal Registered) Carollo Engineers, Inc.

Federal Tax Identification Number 86-0899222

Address 2728 North University Drive, Building 2700

City/State/Zip Coral Springs, FL 33065

Telephone No. 954-837-0030 Fax No. 954-837-0035

Email Address efujikawa@carollo.com

Prepared for the
CITY OF POMPANO BEACH

Continuing Contract for

ENGINEERING SERVICES for WATER and REUSE TREATMENT PLANT PROJECTS

E-23-20

Request for Letters of Interest | AUGUST 2020

carollo
Engineers...Working Wonders With Water®

Title Page

PROJECT NAME AND NUMBER

Continuing Contract for Engineering Services for Water and Reuse Treatment Plant Projects (E-23-20)

NAME OF THE PROPOSER'S FIRM

Carollo Engineers, Inc.

ADDRESS

2728 North University Drive, Building 2700
Coral Springs, FL 33065

PHONE

(954) 837-0030

NAME OF CONTACT PERSON

Elizabeth Fujikawa, PE, BCEE, LEED AP

Client Service Manager

DATE

August 10, 2020

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Page 38 | Section 6: Statement of Skills and Experience of Project Team

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Page 80 | Section 11: City Forms

Page 85 | Section 12: Reviewed and Audited Financial Statements

carollo
Engineers...Working Wonders With Water®

2728 North University Drive, Building 2700, Coral Springs, Florida 33065
P. 954.837.0030 F. 954.837.0035

August 10, 2020

City of Pompano Beach
Purchasing Office
1190 NE 3rd Avenue, Building C
Pompano Beach, FL 33060

Subject: Continuing Contract for Engineering Services for Water and Reuse Treatment Plant Projects

Dear Selection Committee Members:

Carollo Engineers appreciates the opportunity to submit our Statement of Qualifications (SOQ) for the City of Pompano Beach's Continuing Contract for Water and Reuse Treatment Plant Projects. We are fully committed to performing the proposed services.

Carollo first began working for the City in 2012. Since then, we have completed a wide array of projects, starting with an Electrical Master Plan for the treatment plants and several more projects to date such as an evaluation of lime softening versus nanofiltration; Owner's Representative services for the installation of VFDs; a Water Master Plan that included hydraulic modeling of the distribution system; and now, the construction phase of your Transfer Pump Station improvements is nearly finished.

We hope that you agree that these projects brought innovative ideas and the right solutions that were mindful of your budget constraints and respectful of your preferences. As we reflect on the projects, we truly believe that we have worked in partnership, shown our commitment to your staff and operations, and best of all, we have enjoyed working with all of you.

Finally, we hope that as you review this qualifications statement, you agree that Carollo has proven our ability to creatively identify and cost effectively implement the best solutions with exceptional client service. We look forward to working with your staff on your next contract.

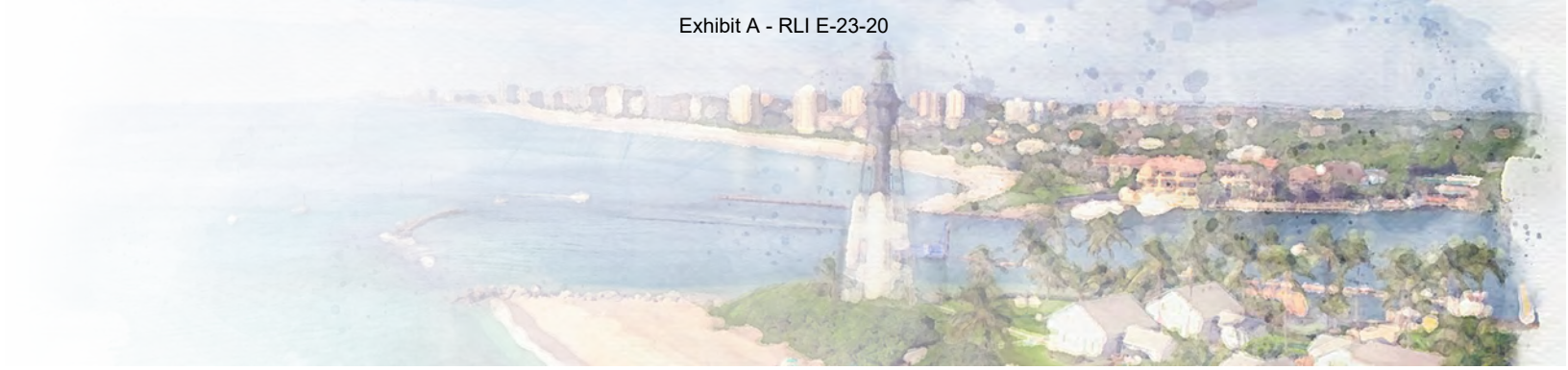
Sincerely,

CAROLLO ENGINEERS, INC.

Elizabeth G. Fujikawa, P.E., BCEE, LEED AP
Vice President and Client Service Manager

AUTHORIZED TO MAKE REPRESENTATIONS
Elizabeth Fujikawa, PE, BCEE, LEED AP
Vice President and Client Service Manager
Coral Springs, FL
efujikawa@carollo.com
(954) 837-0030

• SECTION 1: TECHNICAL APPROACH



Technical Approach

Our proposed approach builds on nine years of working with you and includes innovative ideas that will result in solutions and improvements that will stand the test of time.

APPROACH TO SCOPE OF WORK

We understand that the City faces many issues and challenges related to potable water supply, treatment, and water reclamation, and we have solutions to address those issues.

BRINGING INNOVATIVE IDEAS BASED ON LOCAL KNOWLEDGE

Carollo has earned a reputation in the industry for technical innovation coupled with practical, value-laden solutions that meet our clients' needs over the long term. Some of the ideas we present within this section will likely be new to you. The intent of presenting these ideas is to demonstrate that Carollo offers a unique combination of local understanding, experience, commitment to service, technical innovation, and fresh perspectives that is well suited to address your needs.

Our team brings the direct experience from work on several projects for the City: securing the renewal of a permit for the reuse plant, an electrical master plan and phased electrical improvements, a long-range alternatives study for water treatment options, HVAC improvements to a pump station, and a concentrate disposal evaluation.

We have also built a local reputation for high-quality, high-value service with Broward and Palm Beach Counties; Boynton Beach, Delray Beach, Margate and Sunrise; Miami-Dade County Water and Sewer Department and the South Florida Water Management District, all having entrusted Carollo to assist them with some of their largest and most complex projects over the past few years.

UNDERSTANDING YOUR GOALS AND OBJECTIVES IS KEY TO SUCCESS

Fundamental to the successful delivery of services to the City is to first understand your goals and objectives for each particular project, along with any impacts the work will have on other planned improvements. Regardless of whether the goal is to complete a planning study, a detailed evaluation of the process and non-process systems, alternatives development and screening, or detailed design, we will listen closely to you to make certain we understand the task at hand.

We are aware that this contract's task orders will cover a wide variety of the City's needs. We have identified some preliminary ideas for our technical approaches to various areas of work. And finally, we address how we manage time schedules and control costs on our projects.

The following sections highlight our approach to:

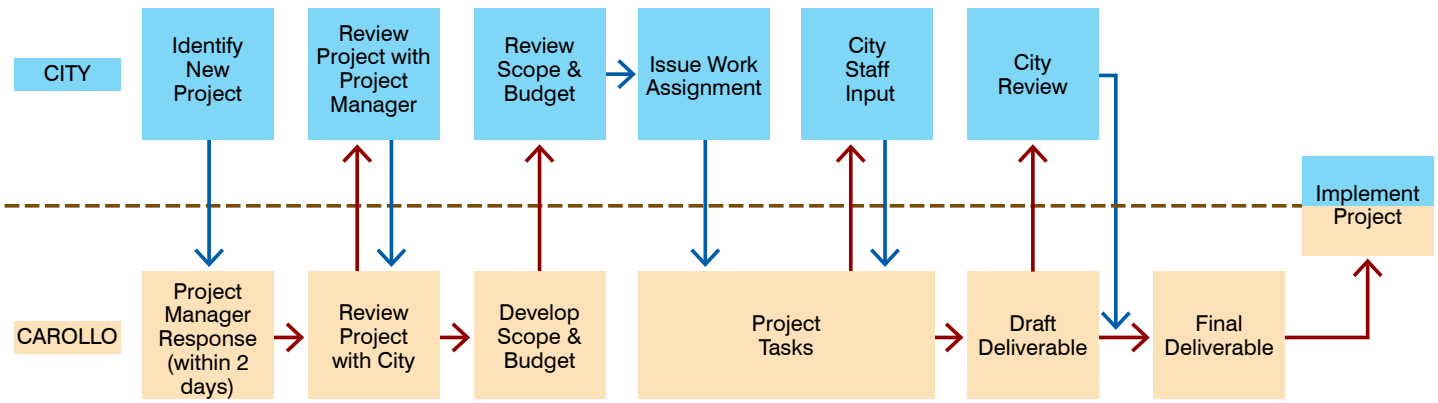
- Task Order Assignments.
- Facility Master Planning.
- Membrane Plant Modifications.
- Lime Softening Plant Modifications and Optimization.
- Water Reclamation.
- Maintaining Time Schedule and Cost Controls.

Additionally, we have included key aspects of our approach to cost estimating, funding assistance, project management, cost and schedule control, and staff and firm availability.

GENERAL APPROACH TO TASK ORDER ASSIGNMENTS

Carollo will use the following approach for all of our task orders:

- **Engage** in an open conversation with the City, where we will listen and discuss the City's needs. Despite the fact that we have an extensive knowledge of the City's infrastructure from past projects, it is critical for our team to openly listen to City staff.
- **Understand** the task order goals, budget, and timeline based on our meetings, research and communication with the City. We will look to understand how the task order fits into the City's overall plan, so we can achieve the task order goals with the big picture in mind.
- **Collaborate** with the City to develop a scope of work which clearly states the task order goals, tasks, budget, and schedule. As part of this process we will work with the City to identify key City and Carollo staff for the task order.
- **Complete** the task order. Carollo commits to putting the right staff on the task order, and maintaining clear and open communication throughout. While we "complete" individual tasks, as your consultant, our work is never complete. We continually aim to work as one team, be forward thinking and always hold the City's best interest. A key element of Carollo's ability to execute both routine and specialized task orders is our ability to assemble a team of local staff supported by national expertise as needed to meet the needs of your task order.

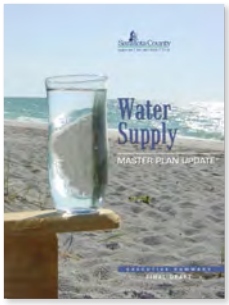


Carollo is committed to working in partnership with your staff, and that includes multiple opportunities for your input throughout each task order.

MASTER PLANNING

GENERAL AND GRANT FUNDING

Our approach to master planning is founded on the fact that a plan is only as reliable as the information used in its development. This means that if the foundation of the work and assumptions are wrong, your master plan, which relies upon this information, is not going to be on target. Therefore, Carollo takes great care in making certain the following key components are duly considered and as accurate as possible.



The Sarasota County Water Supply Master Plan Update integrated input from both County staff and elected officials to develop a framework for the continuation of sustainable water supply development for their customers.

1. **Demand Projections.** We make certain forecasted demands are accurate by properly taking into account projected population growth, per-capita water demand, water use by industrial and commercial users, existing and pending water conservation programs, and economic forecasts.
2. **Condition and Reliability of Infrastructure.** Thorough condition, reliability, and criticality assessments are performed by skilled and experienced staff in the field, working closely with staff from the City, to make certain the capital improvement program is properly prioritized and customized to your needs.
3. **Regulatory Compliance.** Regulations continuously change and evolve—our planning approach carefully considers potential future regulatory changes so the capital improvements and operational changes are timely, cost-effective, and integrated into the master plans in a manner that is complementary to the other planning elements.
4. **Energy Optimization and Sustainability.** Changes in the way you operate your facilities, improvements to reduce energy, and promoting sustainability are likewise integral to all of Carollo's planning efforts.
5. **Overall Optimization.** Aside from energy reductions, opportunities to reduce chemical costs, often times with improvements to finished water quality, are aggressively sought, as well as opportunities to reduce labor and incidental operating costs through appropriate automation.
6. **Automation.** As part of the optimization process, Carollo focuses a great deal on automation—a term that often means different things to different people or firms. To Carollo, automation simply means improving data acquisition and control in a logical manner by making certain the benefits of automating any given process or piece of equipment outweigh the associated costs. Whatever the benefit (monetary savings, improved water quality, enhanced reliability, safety, etc.), it must be well defined and understood before making the associated investment.
7. **Ease of Use.** No planning document is useful unless it is user-friendly and easy to understand. We take care in producing master plans, GIS, and other supporting materials that are carefully organized reference tools that are user friendly and easily updated. The master plan will clearly describe all assumptions, methods, and considerations that led to its recommendations. The GIS and hydraulic model databases will be easy to understand and maintained while the CIP will clearly describe which projects need to be done when, where, and why.

Most importantly, these efforts will be done while working side by side with your staff so that your experience dovetails with that of our own. Likewise, we will make certain your experience is woven into the planning efforts, and your preferences and needs listened to as well. Any master planning we may perform for you will fit into your overall planning efforts, enhanced by innovative solutions stemming from our fresh approach and passion to find and seek such solutions on your behalf.

CASE STUDY: DYNAMIC UTILITY CAPITAL PLANNING (UMOP)

As an alternative to typical Master Plans becoming outdated the day after delivery, we have developed a unique electronic Master Plan that serves as a "smart data dashboard" to visualize an array of data, enabling dynamic rate planning, decision making for capital improvements and asset management. Interactive dashboards created in data visualization software provide "storyboards" that can be used for Commission presentations and Capital Improvement Plans.

Carollo's comprehensive approach to evaluating facilities provides cost-saving optimization and, if necessary, defensible and economical upgrades.

These dashboards also allow unprecedented levels of connectivity between data sources and utility management tools, such as GIS, CMMS, asset management databases, financial models, hydraulic models, and risk management factors - providing management with "dials and controls" to project impact of projects on rates and charges, allowing users to adjust timing and scope of capital projects to achieve financial goals (reserve balances, cash flows, debt coverage ratios, and other key financial metrics). Example features include:

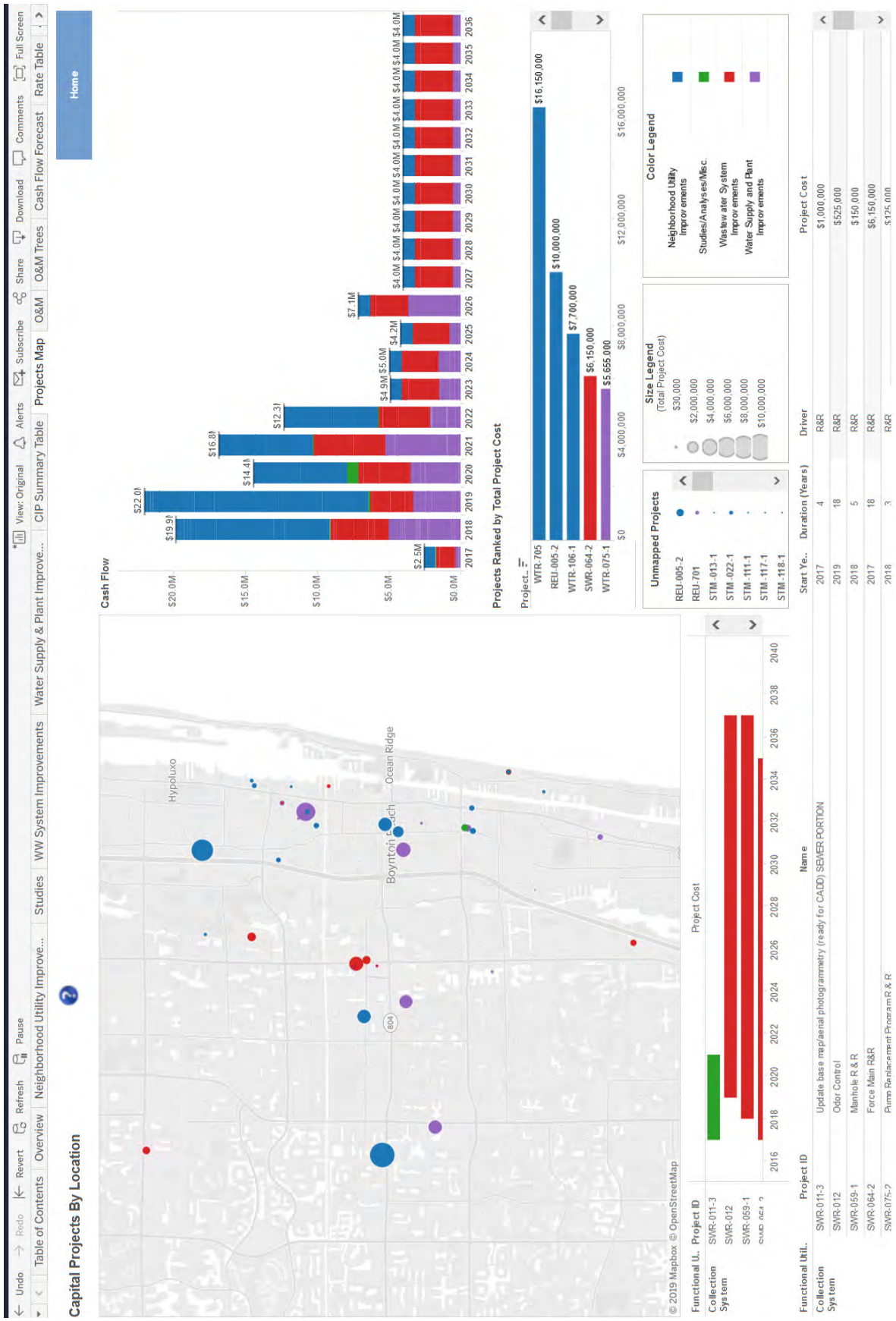
- A geographic map of every major capital project, including capital costs and drivers (e.g. growth, R&R, regulatory, etc.).
- A Scenario Manager to adjust to changing factors such as population growth, treatment for regulatory requirements, and R&R needs.
- A Financial Module to allow analyses of "what ifs," including "slider controls" allowing users to adjust project timing and view rate impact.

DISTRIBUTION SYSTEM OPERATIONS - MAINTAINING TARGET PRESSURES AND REDUCING OPERATING COSTS

While the City has a mature service area, a potential new development (Casino Live property) will further increase water demand. Like many utilities, the City utilizes a hydraulic model as a planning and assessment tool. As water demand continues to change with new development, the City must continue to plan for changes, including hydraulics and water quality. Our team has partnered with you to evaluate the impacts of system growth and future water allocations, this work resulted in your latest Water Master Plan.

As part of the Master Plan and recent completion of the City's hydraulic model update, our team was able to:

- Deliver an up to date hydraulic model for the City's distribution system.
- Update and correct the network infrastructure per GIS and communications with staff.
- Simulate the actual performance of the high service pump stations – by adding pumps and actual data-derived pumping controls.
- Update total demands with inclusion of large users.
- Evaluate network hydraulic performance.
- Predict system performance upon projected future growth.
- Evaluate storage and pumping.
- Perform a desktop pipe replacement assessment based solely on age and material.
- Verify fire flow at locations of non-compliance per provided reports.
- Evaluate water age.



Carollo's comprehensive approach to evaluating facilities provides cost-saving optimization and, if necessary, defensible and economical upgrades.

Most importantly, we were able to gain considerable knowledge about your distribution system and its operations, which puts us at a point where we can confidently offer the City additional relevant services 'without a learning curve' in the upcoming years. Such services could include:

- Continuous model update for a 'living' planning tool.
- Cost-effective testing and understanding of any potential scenario, from a basic pump change, to a major emergency event.
- Development of strategies to solve hydraulic performance weaknesses.
- Reliability and redundancy of infrastructure in the event of a water main break, and what-if operational scenarios in the event of pipe breaks or down time.
- A complete risk-based pipe replacement program derived from the previously completed desktop assessment and a new condition assessment.
- Evaluate fire flow compliance at each and all City's fire hydrants for ISO and non-ISO regulated locations.
- Pinpoint solutions for areas with high water age or diminished water quality, which may include:
  - » Assessment of the likelihood of success of different unidirectional flushing (UDF) strategies and plan UDF programs accordingly.
  - » Optional capital projects to improve connectivity.
  - » Recommendations for regular automated flushing and rotation schemes.
- A full calibration using consumption data from billing records.
- Regulatory reporting.
- Evaluation and optimization of developer utility design proposals and associated costs for the City.
- Permitting assistance.

LF	Criticality				
Vulnerability	1-2	3-4	5-6	7-8	9-10
1	27,653 LF	1,204,253 LF	165,484 LF	183,020 LF	32,820 LF
2	5,302 LF	83,225 LF	8,589 LF	42,325 LF	289 LF
3	620 LF	69,215 LF	8,814 LF	56,332 LF	3,213 LF
4	0	0	0	0	0
5	0	1,004 LF	1,333 LF	745 LF	0

Increasing Risk

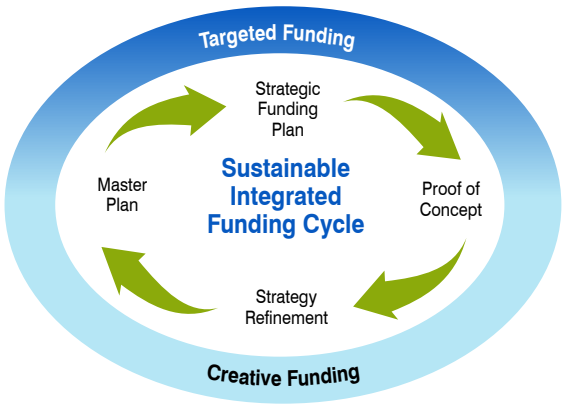
Increasing Risk

ADDING VALUE THROUGH OUTSIDE FUNDING

The Carollo Team works to enhance value in every project that we undertake. One of the ways we do that is to attract governmental funding from local, state, and federal sources. We will rigorously identify funding opportunities that must take place throughout the planning cycle from project conceptualization to final design and construction.

Traditional funding efforts (i.e., targeted funding) are focused on a linear approach, where a specific project has been identified through an agency's water supply plan, and then funds are sought and obtained based on project attributes. The downside to this approach is that a significant portion of the funding spectrum is ignored and opportunities are lost. Our team's approach is to not only consider "targeted" funding opportunities, but also proactively identify "creative" opportunities that would otherwise not be considered.

Creative funding opportunities include research grants, planning grants, block grants, and incentives for energy efficiency and water conservation. Achieving success with creative funding sources involves determining the full benefits of a project to the community and highlighting those benefits in funding applications (e.g., indirect benefits to water supply, job creation benefit, environmental benefits, demonstration of new technologies).



Carollo's objective is to foster a sustainable, integrated funding approach for the City's water system projects. We will help identify and secure both "creative" and "targeted" funding opportunities, maximizing return while minimizing financial impacts.

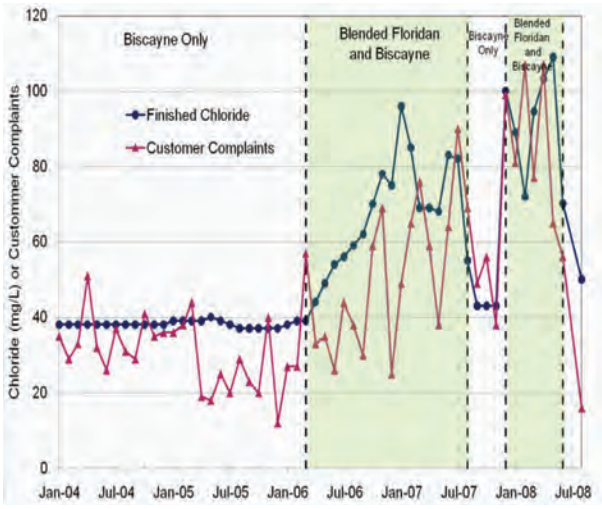
Our team's belief is that funding and legislative assistance should be an integral part of the development and refinement of your strategic planning process. Using this approach, Carollo teams have helped our clients secure millions of dollars for projects from such programs as:

- State Revolving Fund Loans, including "Green Project Reserve."
- Matching Grants through the Florida Water Management District.
- Department of Energy Matching Grants.

ENSURING A RELIABLE WATER SUPPLY FOR THE CITY'S FUTURE

One of the challenges facing the City is developing a water supply that addresses future potable water demand projections within the constraints imposed by limited water resources in a tightening regulatory environment.

Historically, the City has relied on the Biscayne Aquifer as its sole water supply source. The City has 25 wells in two active wellfields (Western Wellfield (Palm Aire) and Eastern Wellfield (Airport) with a firm capacity of 57-mgd and water treatment plants with a total capacity of 50-mgd.



By using historical customer complaint records and water quality data, for the Miami-Dade Water and Sewer Department, Carollo identified factors that contributed to corrosion and red water, and developed solutions for this problem.

Concerns about salt-water intrusion near the Eastern wellfield and movement of contaminated groundwater near the Western wellfield have limited practical withdrawal rates. To address long term needs, the City has elected to participate in the South Florida Water Management District's C-51 Reservoir Project.

Pellet Softening may offer the City an innovative solution to lime sludge disposal concerns.

Concerns about salt-water intrusion near the Eastern wellfield and movement of contaminated groundwater near the Western wellfield have limited practical withdrawal rates. To address long-term needs, the City has elected to participate in the South Florida Water Management District's C-51 Reservoir Project.

The City has also performed preliminary investigations into enhanced coagulation and expanding nanofiltration treatment. We are aware that other needs must be considered, such as chloramination modifications for continued DBP compliance, nanofiltration concentrate recovery, color and DBP precursor removal—potentially through ion exchange treatment, and addressing long term lime sludge disposal needs—potentially with pellet softening or replacement of the softening plant with nanofiltration.

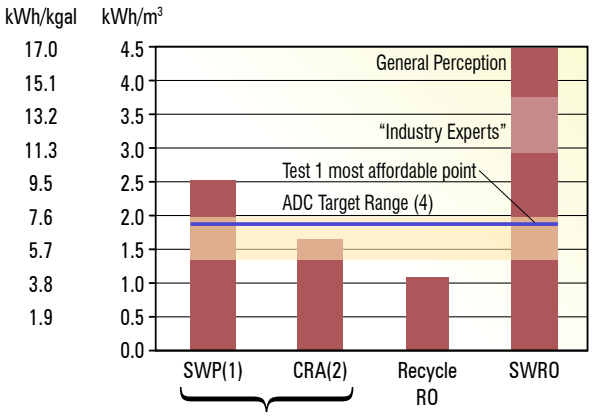
MEMBRANE PLANT MODIFICATIONS

MEMBRANE TREATMENT INDUSTRY LEADERSHIP

Carollo has been an industry leader in helping our clients implement and optimize practical, reliable, and affordable membrane treatment systems. We have been involved in the design, construction, and operation of membrane treatment systems for more than two decades. In addition to our planning, design, and construction capabilities, Carollo's research department leads the industry in funded research of water-related membrane technologies. We regularly utilize state-of-the-art software, bench-scale testing, and pilot testing to determine appropriate design parameters. This level of testing and evaluation provides the owner and the design engineer the most reliable information to ensure that the RO or membrane softening treatment system that is designed and constructed can be operated cost effectively while meeting all treatment and production goals.

An example of our industry leading efforts include our involvement with the Affordable Desalination Collaboration (a California not-for-profit group whose mission is to develop cost effective means to make potable water from seawater). As the only consultant member of this organization, we provide overall leadership through Tom Seacord of Carollo. As a member of this group, we have demonstrated that by using a combination of proven technologies, seawater reverse osmosis (SWRO) can be used to produce water at an affordable cost compared to other supply alternatives (California water supplies). We received international attention due to our development and testing of

Various Energy Requirements and the ADC



1. SWP = California State Water Project
2. CRA = Colorado River Aquaduct Project
3. SWP numbers do not include distribution beyond Castaic Lake or treatment
4. ADC target range does not include supply or distribution, i.e. RO process only
5. Source: Water Sources Powering Southern California by Robert C. Wilkinson Ph.D., 01/04

The project energy requirements with the ADC design are 40 to 50 percent less than expert projections for Southern California.

a seawater desalination plant design with an energy consumption rate of 6 kW-hr/kgal, approximately three times less than ever seen before.

Carollo leads the industry in membrane research.

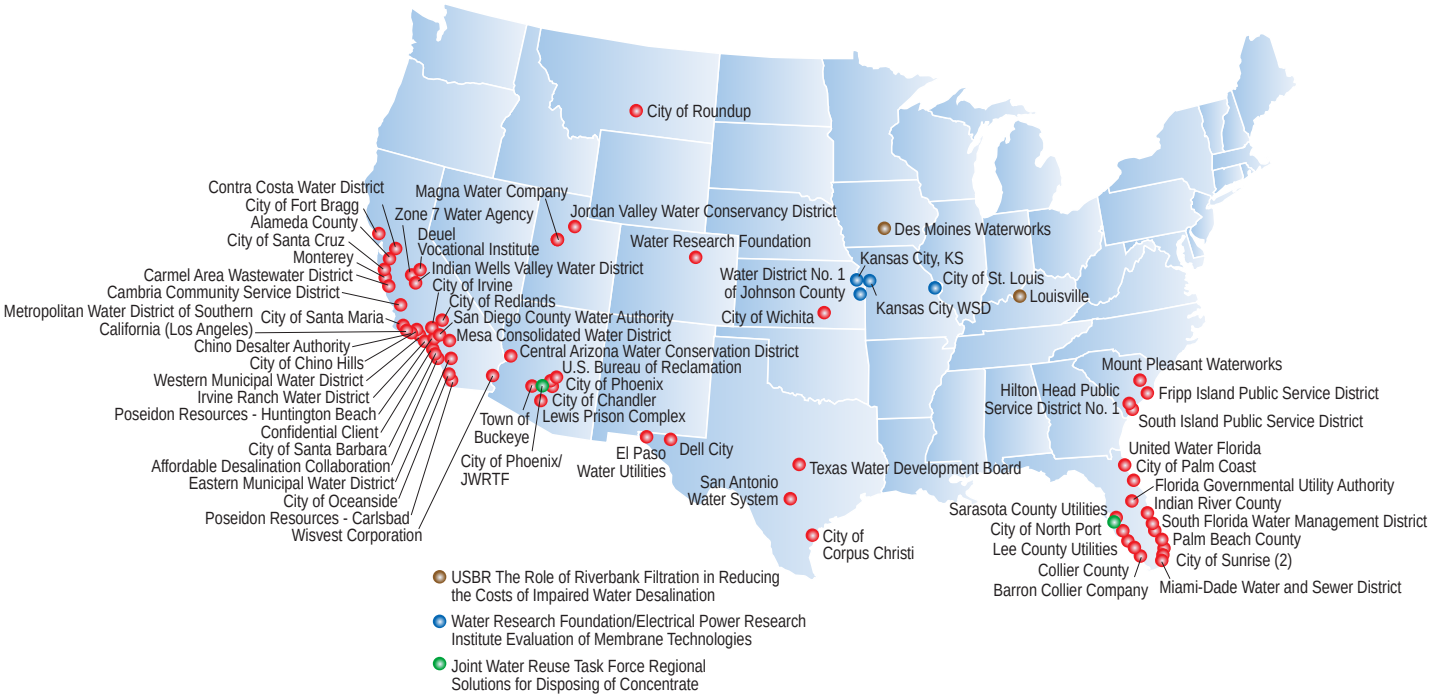
Our understanding of the issues required to design membrane facilities provides credence to our understanding of how these systems operate, and operations are crucial to making these processes economical. Energy efficiency, automation, control, and alternative chemical pretreatments are key design features that equate to economical operation. Carollo has led the industry by implementing these features in the projects that we have engineered.

MEMBRANE SYSTEM OPTIMIZATION

With diminishing funding resources, optimizing existing and future membrane facilities provides an opportunity to meet potable water system demands in the future at the lowest possible expense. We have performed a number of projects that have focused on these objectives.

Detailed optimization studies evaluate existing membrane treatment systems to identify and develop detailed operating procedures for accomplishing:

- Lowest Unit Water Costs (wet season conditions).
- Maximum Production.
- Maximum Recovery of Raw Water Source (drought conditions).
- Best Water Quality.
- Nominal Target Operation (determine operations envelope where above objectives intersect).



Carollo has completed multiple projects involving membrane treatment across the nation.

OPTIMIZATION OF MEMBRANE CONFIGURATIONS

Water production can be increased in many ways including through the maximization of available membrane treatment area (use membranes with larger surface areas which fit in existing equipment), through the use of membranes with greater treatment capability per unit area (flux), reduced energy requirements (discussed further in following Reducing Energy subparagraph), and feed water treatment capabilities (i.e., use different elements in stages to maximize production and recovery).

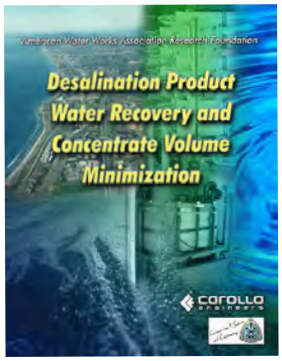
MAXIMIZE PRODUCTION THROUGH CONCENTRATE MINIMIZATION

Conventional membrane treatment approaches typically allow up to approximately 75 to 85 percent of the feed stream to be recovered as potable water, with the remaining amount (concentrate or reject water) being disposed of. Currently, the SFWMD estimates that if the concentrate stream from membrane treatment plants projected to exist in 2025 is increased from 75-percent to 92-percent recovery, an additional 120-mgd of potable water will be produced while using the same amount of source water.

Carollo has completed multiple concentrate treatment pilot studies for utilities in Florida, California, and Arizona. Carollo published the Water Research Foundation report, Desalination Product Water Recovery and Concentrate Volume Minimization. This document reported on over 20 promising RO concentrate treatment technologies. Highlighted in the report was an innovative approach combining RO, EDR, and chemical precipitation processes, to allow recoveries up to about 95 percent.

The SFWMD commissioned Carollo to study the potential for RO concentrate minimization at South Florida utilities. The project reviewed water quality at 12 plants within the District to identify a solution to cost-effectively handle RO concentrate while meeting technical and permitting requirements. A modified lime softening process was evaluated. Using the information gained from this assessment, a pilot study was performed at the City of North Miami Beach, showing an increase in overall RO recovery of 13 percent; from 75 to 88 percent.

Carollo systematically reviewed existing concentrate management technologies in the Water Research Foundation Report "Desalination Product Water Recovery and Concentrate Volume Minimization."



"Carollo Engineers has exceeded our expectations in what we should expect from an engineer. Innovated design modifications offered by Carollo included the redesign of the existing three RO trains to increase the production rate by approximately 20 percent."

— Ms. Kelley Ferda
General Manager, South Island Public Service District Northeast Service Area Manager, Collier County, FL

Our experience extends beyond pilot-scale investigations. Carollo recently designed the first zero-discharge groundwater desalter in the U.S. at the Deuel Vocational Institute in California. Using a vapor compression brine concentrator, the system treats the concentrate to raise the overall system recovery above 99 percent, producing 800,000 gpd, with the remaining concentrate being sent to an evaporation pond.

Carollo pilot tested a cost-effective approach for RO concentrate recovery in South Florida.

Many South Florida utilities have considered recovering nanofiltration (NF) concentrate through RO. While an attractive idea, the high concentrations of iron and organic matter characteristic of NF concentrate must be considered. The long-term, stable performance of RO membranes used to recover additional product water could be threatened if proper pretreatment is not provided. Carollo is currently preparing a tailored collaboration with the Water Research Foundation to identify the most effective way to recover NF concentrate, effectively reducing the organic matter and foulants while minimizing chemical costs.

First zero-discharge RO WTP in the U.S. achieves 99-percent recovery.

Carollo carried out jar tests at the City of Sunrise to evaluate NF concentrate recovery to ultimately increase treated water supplies.

REDUCING ENERGY CONSUMPTION IN MEMBRANE TREATMENT

Energy has become a key concern for the water industry, as there has been increased focus on costs, sustainability, greenhouse gas emissions, and reliability. Recent breakthroughs in state-of-the-art energy recovery devices and membrane element manufacturing now provide utilities with significant opportunities to lower the energy use of membrane treatment systems.

Sulfuric acid and scale inhibitor have been industry standard chemicals for pretreatment.

Energy recovery devices save money by capturing pressure that would be lost in the waste stream and returning it to the high-pressure pumps at the beginning of the system. An example of this, which was designed by Carollo, is Pompano Beach's neighbor to the west, Collier County. By installing an energy recovery device, they captured the pressure that was being lost in its waste stream and used it to boost its high-pressure feed pumps, saving an estimated $550,000/year.

Carollo developed the first design in the country that eliminated acid from an RO plant, saving Mount Pleasant Waterworks $250,000 per year.

REDUCING CHEMICAL CONSUMPTION IN MEMBRANE TREATMENT

Chemicals are an important and costly part of operating membrane systems. Sulfuric acid, as a pretreatment chemical, has been an industry standard chemical used in membrane systems across the industry to reduce the scaling potential of calcium carbonate and help keep iron in the dissolved, ferrous form. The result of this acid addition is enhanced system recovery and prevention of membrane fouling. Despite these benefits, sulfuric acid is a hazardous and costly chemical to use.

Carollo developed the first design in the country that eliminated acid from an RO treatment plant. In 1999, Mount Pleasant Waterworks, SC, saved $250,000/year when it stopped adding acid to its membrane system. Special consideration for acid elimination must be given to facilities that have iron in their raw water. The presence of iron may necessitate the use of sulfuric acid as a pretreatment chemical. Additionally, for waters containing hydrogen sulfide, if acid is eliminated as a pretreatment chemical, pH adjustment may be required before subsequent treatment using degasification.

"Carollo Engineers successfully implemented an innovative hybrid membrane design that not only met, but exceeded the expectations of MPW…Carollo Engineers efforts and results were very impressive and I would recommend their services to any water utility that strives for perfection and high performance."

— Mr. Greg Hill
Operations Supervisor, Mount Pleasant Waterworks

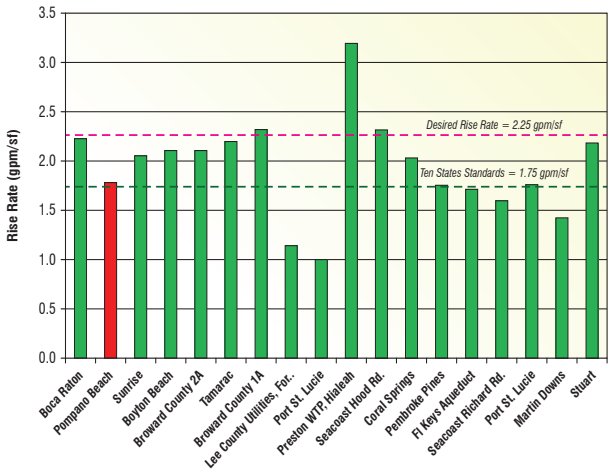
LIME SOFTENING PLANT MODIFICATIONS

The City's water treatment includes a 40-mgd lime softening facility along with the 10-mgd of membrane softening discussed earlier. The lime softening facility recovers approximately 97 percent of the raw water as finished product, with additional treatment by gravity filtration. The water is treated with chlorine, ammonia, fluoride, and recarbonation before being pumped into the distribution system.

Due to concerns about the safety of chlorine gas, the City switched to sodium hypochlorite, which is a safer disinfectant to store and handle. Nevertheless, extended storage of sodium hypochlorite requires careful management and turnover to mitigate the formation of chlorite, perchlorate, and other byproducts that can form during bulk storage. In response to the enactment of the groundwater rule, the City reconfigured underground piping and the clearwell to provide adequate contact time for 4-log virus disinfection. Lime softening is a reliable, affordable process that has long been the unit operation of choice for treating groundwater in Florida. The City uses two 100-ft 20-mgd Accelator® Solids Contact Clarifiers (SCCs). The rise rate of these clarifiers is near the guideline of 1.75 gpm/sf given by the 10 State Standards and fits in well within the normal operating ranges of similar facilities in South Florida.

Carollo has worked with facilities throughout the Midwest, Texas, and Florida that are similar to Pompano Beach to maximize the use of their existing facilities and minimize the cost of rehabilitation and upgrades. Similar to Pompano Beach's water plant, the City of Olathe, KS, has a water plant with parallel lime softeners and membranes. Carollo increased the Olathe's softening basin capacity to 37-mgd, by retrofitting the existing lime softening basins, thus allowing the city to avoid the extra cost of additional structures.

Carollo's experience in assessing the performance of SCCs extends not only from projects throughout the lime softening region of the Midwest, but also here in South Florida. Recently, for Miami-Dade County, Carollo performed a detailed analysis of the operations of the SCCs at the 165-mgd Preston WTP; an evaluation that compared the loading rates and operating protocol against all the other SCC's throughout the state of Florida, including those at Pompano Beach.



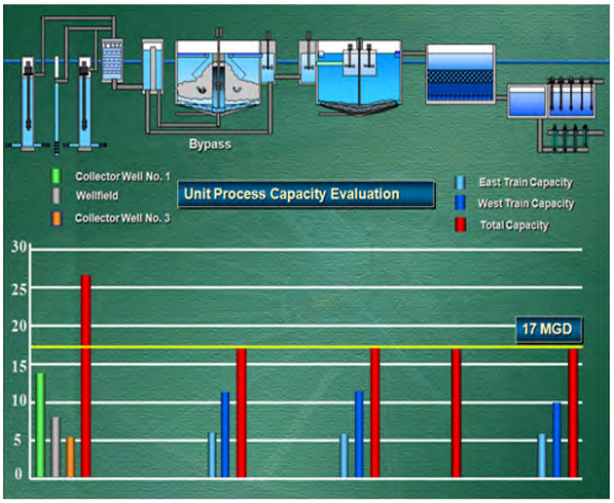
Pompano Beach's Solids Contact Clarifiers have a design rise rate comparable to its neighbors.

The SCCs utilized at your treatment facility are one of the oldest technologies in the water treatment industry. Although widely used, SCCs are also one of the most misunderstood and neglected unit processes. The SCC process is the first step in the lime softening solids management, and its impact on the final water quality and dewatered solids should not be underestimated.

Lime softening and membrane softening are used by the City to meet different water quality objectives from the Eastern and Western Wellfields.

Maintaining a high solids concentration in the center cone of the SCC is critical for producing excellent settled water quality and producing a concentrated residuals stream. The concentration of the center cone is managed by increasing the recirculation of solids within the cone. The softening process is optimized by allowing the solids to remain in the center cone and for successive layers of calcium carbonate to precipitate on the existing solids. Increasing the solids concentration in the center cone also decreases the volume of the lime softening solids stream that needs to be processed through the thickener and pumped to the lagoons.

Detailed performance evaluations of Miami-Dade's 165-mgd of SCCs (accelerators similar to Pompano Beach) were conducted by Carollo.



Graphs of Process (and Hydraulic) Capacities, such as the one depicted for Olathe, KS, can readily depict strategic limitations and bottlenecks.

The generation of solids in the center cone is dependent upon the following factors:

- Flow rate
- Influent hardness
- Effluent hardness
- Lime dose

Carollo has developed a proven, simple algorithm that captures these factors and uses them to control the solids concentration in the center cone of SCCs. Prior to implementing this algorithm, the City of Manhattan, KS, could not stay within the recommended percent solids range for more than 4 days. Once the algorithm was implemented, the City was able the stay within the recommended percent solids for more than 100 days straight. Maintaining the proper solids concentration results in excellent settled water quality (less solids carryover) and improves dewaterability, resulting in less hauling and disposal costs.

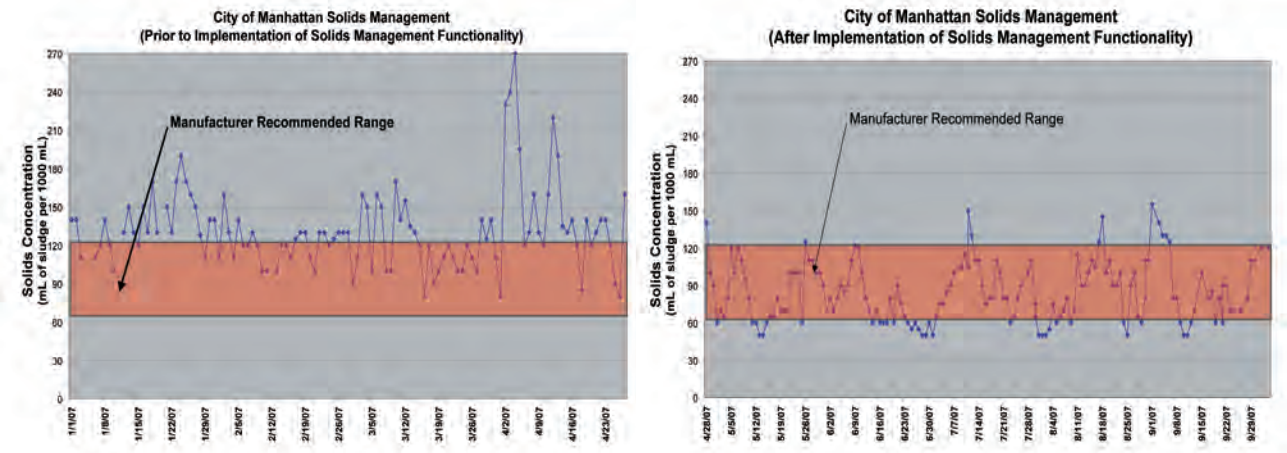
Lime softening basins operating in conjunction with Membrane Treatment at Olathe, KS, 37-mgd WTP.

SPLIT SOFTENING TREATMENT

The softening process occurs when the pH is high enough that all of the bicarbonate alkalinity is converted to carbonate, which causes mineral precipitation. The challenge with this precipitation reaction is that it "over-softens" the water (takes out more of the mineral content than desired), resulting in lower hardness than the desired hardness goal. In the U.S., most utilities bypass a portion of this flow around the softening process, but most Southeast Florida utilities are prevented from doing this due to very high total organic carbon content of the raw water and its associated color.

Split softening treatment can be successfully utilized in SE Florida if a portion of the carbon content in the bypass water is removed to prevent water color problems. Carollo has recently completed a design for the Palm Beach County, where the use of an ion exchange process will permit bypass flow around the softening units. This process will allow Palm Beach County to "dial-in" the finished water hardness and increase the finished water alkalinity all while producing a more stabilized finished water. In addition, the chemical usage was decreased, solids production was reduced, and the resulting bypass flow will allow Palm Beach County to increase the plant capacity by 15 percent without building any new treatment facilities.

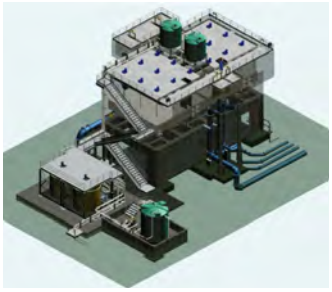
As the regulatory focus of the Environmental Protection Agency shifts to the distribution system, the importance of finished water alkalinity will continue to increase. For systems that utilize chloramines (like Pompano Beach) high finished water alkalinities are even more critical. High alkalinities allow finished water to resist pH changes associated with acid production from biological growth (including nitrification). In addition, the reduction of the organics in the finished water, it also reduces the food source for biofilm growth, which will result in less chloramine residual degradation and reduced distribution system flushing, which can be extremely costly. For the Palm Beach County project, it was estimated that the



Carollo developed a simple, proven control algorithm for the City of Manhattan's, KS, solids contact clarifier, resulting in excellent settled water quality, improved dewaterability, and less hauling and disposal costs.

reduction in organics in the finished water could result in a 50-percent reduction in flushing (for Palm Beach County this 50-percent reduction represented in excess of 1.5-million gallons per day of flushing water saved). A reduction in the City's flushing would also be expected if a split softening system was incorporated into the current treatment schemes for Fiveash Water Treatment Plant (WTP).

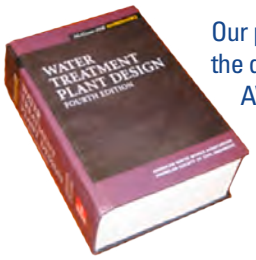
Carollo's Palm Beach County Magnetic Ion Exchange (MIEX®) reduces chemical use and solids production and increased the plant capacity 15 percent without building any new treatment facilities.



Solids contact clarifiers at the Ullrich Water Treatment Plant, City of Austin, TX, were optimized to maximize settled water quality, improve sludge dewatering, and reduce disposal costs.

LIME SLAKING SYSTEM

In a lime softening treatment system, the majority of the chemical usage and cost is associated with the amount of lime consumed in the process. In order to achieve the maximum efficiency of the lime used, the reactivity, which is primarily controlled by slaking temperature, should be as close to the optimum as possible. The optimal slaking temperature is just below the boiling point of water (this forms the highest surface area of lime). Therefore, the temperature of the slaking process should be as high as possible without creating localized areas where boiling would occur.



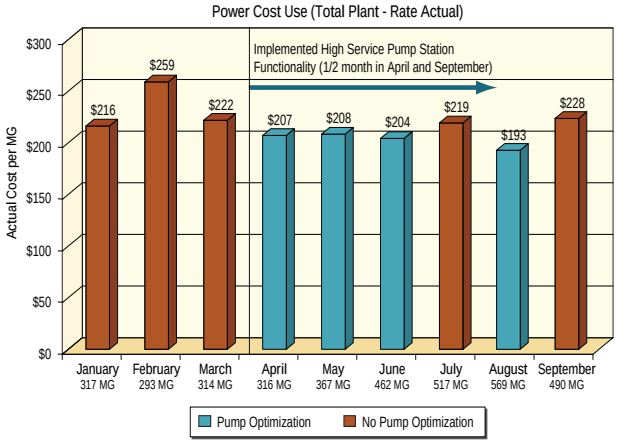
Our proposed project team is rewrote the dry chemical feed section of the AWWA/ASCE WTP Design book, which for the first time will include batch lime slaking.

Due to the changes in the reactivity of the quicklime, the dilution water temperature, particle size and gradation of the quicklime, and the amount of magnesium in the lime, determination of the correct water-to-lime ratio and detention time, slakers can be difficult to set and maintain. Batch slaking systems address these changing variables and maintain a consistent slaking temperature set point.

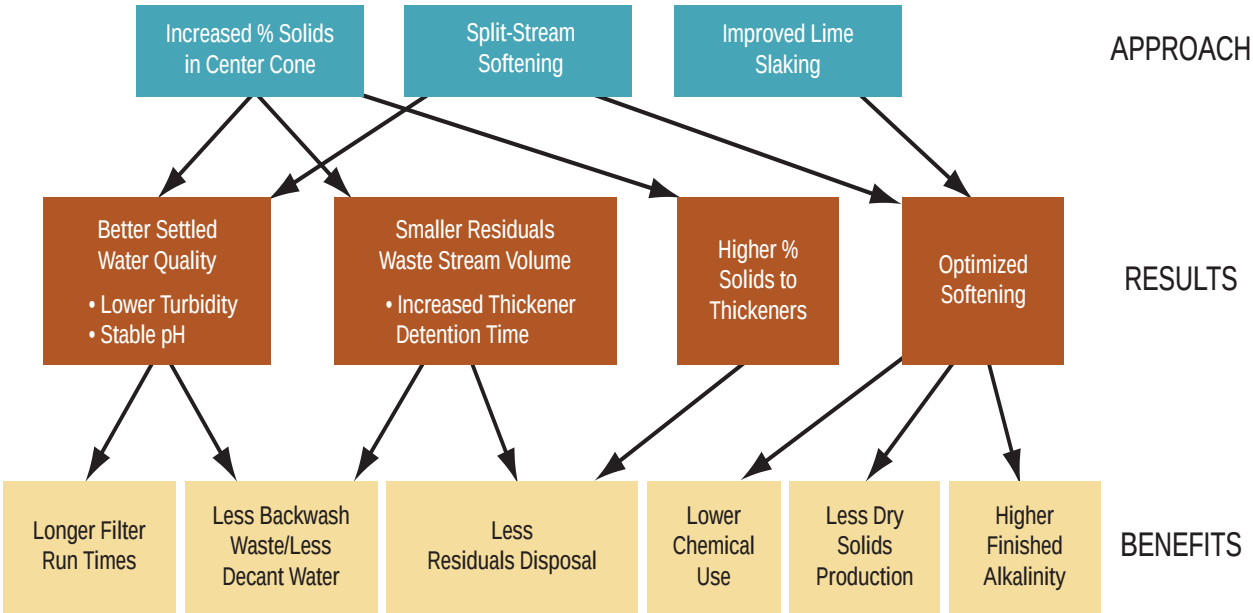
Carollo has experience with the design and installation of batch lime slaking systems including installations for large utilities. Our proposed project team members rewrote the dry chemical feed section of the AWWA/ASCE WTP Design Book, which includes a section on batch lime slaking.

Our team has experience assisting utilities with securing funding for lime slaker replacement projects due to the green features associated with reductions in lime doses, the reduction in solids production and the reduced shipping and hauling costs.

Our team has secured funding for lime slaker replacement projects due to the "green" benefits associated with reductions in lime dose, solids production, and shipping and hauling costs.



Actual power consumption measured over a 9-month period at a WTP.



Carollo's proven system approach to the softening process provides synergistic benefits resulting in improved performance and reduced operations costs.

PUMPING SYSTEM OPTIMIZATION

Water utility pumping systems consume a significant $300 amount of energy. Carollo has developed an optimization approach to pumping that is tailored to a client's system and has proven to save money by reducing energy costs. This approach involves developing a pumping control algorithm that can be programmed into the control system to operate the pumps based on the desired system pressure and flow rate, in addition to taking into account the operating efficiency and the number of pumps running. All too often, pumps are referred to by their capacity, similar to saying a pump with a rated point of 6,000 gallons per minute at 170-feet of total dynamic head is "a 6,000 gpm pump." This is not always the case when the system pressure varies or the number of pumps operating changes, the corresponding output flow rates may change. Recognizing this, a control algorithm may be developed to take into account all of these parameters. The premise is based on the fact that in general, the more pumps driven by variable frequency drives that are operated in parallel, the stricter the efficiency band that can be achieved. The pumping system may then operate at higher efficiencies throughout a wide range of flows. The accompanying figure below represents a graph of actual power consumption over the course of 9 months of operation at an example water treatment plant where this system was implemented. The end result was actual cost savings due to operating the pumps more efficiently.

DISTRIBUTION SYSTEM OPERATIONS - MAINTAINING TARGETED WATER QUALITY

Oftentimes overlooked, water quality in the distribution system can deteriorate rapidly from demands placed on the residual disinfectant from organic and inorganic constituents in the water, and from nitrification, which is common to utilities throughout Florida. In fact, Palm Beach County faced this problem and sought out Carollo to complete a comprehensive study of their treatment and distribution systems in order to abate this problem. Carollo prepared a Nitrification Action Plan for Palm Beach County that quickly became the benchmark in the state on how such studies should be undertaken and implemented. This project involved hydraulic modeling (discussed above under master planning), water quality sampling, analysis, and evaluations at the plant and throughout the distribution system, and development of short-term and long-term strategies to deter nitrification throughout the system.

Most importantly, Carollo understands not only the planning and design elements of a distribution system relative to conveying water, but we also have specialists trained in understanding and managing distribution water quality. This includes several staff with PhDs in water distribution system water quality, one of which is based in our Broward County office.

"Carollo Engineers has been one of this department's three utilities consulting engineers for approximately three and one-half years. During this time, Carollo staff has been responsive and faithful to their contractual responsibilities. We are very pleased with Carollo's professional services."

— Mr. Hank Breitenkam
Director of Utilities, City of Plantation, FL

WATER RECLAMATION: AUGMENTING AND PROTECTING THE CITY'S WATER RESOURCES

In many municipalities landscape irrigation can take up nearly half the potable water demand. Recognizing that reuse water can effectively offset most of this demand and wanting to address future water needs and protect the Eastern Wellfield, the City turned to water reuse to meet a significant portion of irrigation demand. As one of the first water reuse facilities in the area, the City's water reuse facility has diverted treated wastewater from Broward County's North Regional Wastewater Treatment Plant that otherwise would have been discharged to the Atlantic Ocean.

This alternative irrigation system, OASIS, has reduced withdrawals from wellfields sensitive to salt water intrusion and has recharged the regional aquifer, protecting fresh water wells by pushing the saltwater intrusion line back towards the ocean. The City's Reclaimed Water Treatment Facility provides filtration and chlorination for up to 7.5-mgd of treated wastewater from Broward County's North District WWTP. The facility includes vertical turbine filter feed pumps, single media filter modules, sodium hypochlorite feed facilities, and 6 MG of ground storage. The City is continuously expanding the reuse water distribution system to residential areas and large commercial users.

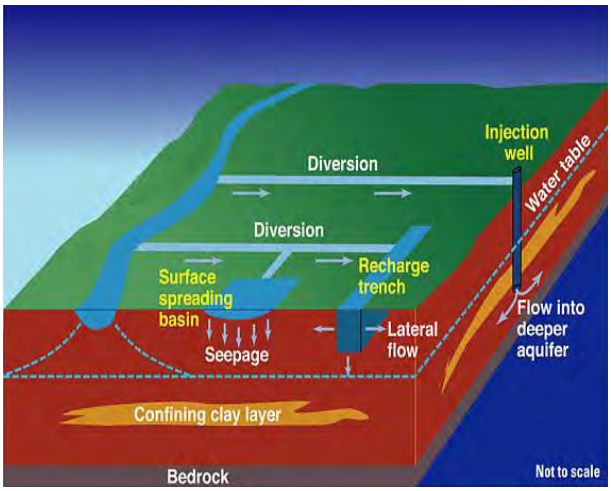
The City has taken steps to encourage conservation and reuse by enacting a water conservation rate structure, limiting irrigation hours, enacting ultra low volume plumbing standards, encouraging xeriscape landscaping, requiring rain sensor devices on irrigation systems, requiring residents to pay for reuse where available, and mandating multifamily units, and commercial properties connect, metered reuse connections, and prohibiting new irrigation wells in areas where reuse water is available.

Additionally, the City has an aggressive infrastructure management program to identify inflow and infiltration (I&I) in the wastewater collection system. Reducing inflows to the Broward County wastewater treatment plant maximizes existing treatment plant infrastructure, while also reducing potential salt water inflow, in areas of the collection system closer to the ocean.

The City's Reclaimed Water Treatment Facility, one of the earliest in the region, provides reuse water through a progressive program.

The OASIS facility and reuse distribution system will require further expansion to meet future reuse demand and aid Broward County in meeting the required reuse volumes after the ocean outfall line is closed. Nearly 500-mgd are lost to tide in Broward and Palm Beach counties. The City is currently close to 47 percent of capacity of this facility.

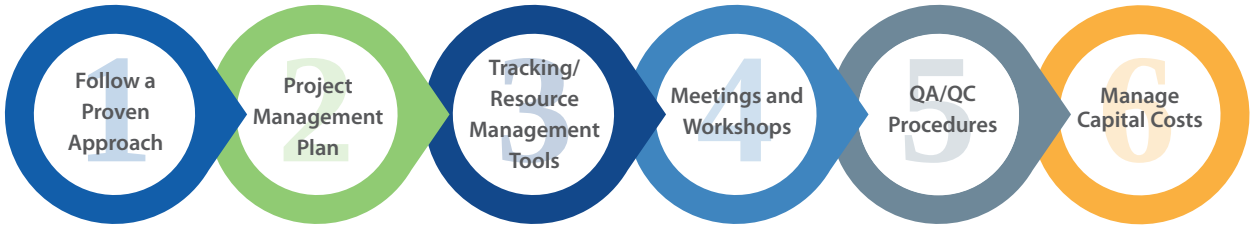
The City has also partnered with the WateReuse Association to investigate the potential impacts of widespread water reuse on non-point source nutrient loadings throughout the City. EPA's numeric nutrient criteria may restrict the level of nitrogen and phosphorus that are allowed in the City's reuse water. This study will investigate the nutrient loading contributions of stormwater and reuse sources. Effectively managing the nutrient content of reuse water will be essential to ensuring the expansion of reuse. Carollo's understanding of the EPA's pending Numeric Nutrient Criteria is second to none. Our team prepared a thorough evaluation, on behalf of the Florida Water Environment Association's (FWEA) Utility Council of the implications of the Numeric Nutrient Criteria for water reclamation in the state of Florida. We will bring the same expertise to all your nutrient management or reduction projects.



Recharge trenches are a proven means of transferring canal or surface water to the underlying aquifer.

HOW DO WE MAINTAIN TIME SCHEDULES AND CONTROL COSTS?

SIX ESSENTIAL STEPS FOR SCHEDULE AND COST CONTROL:

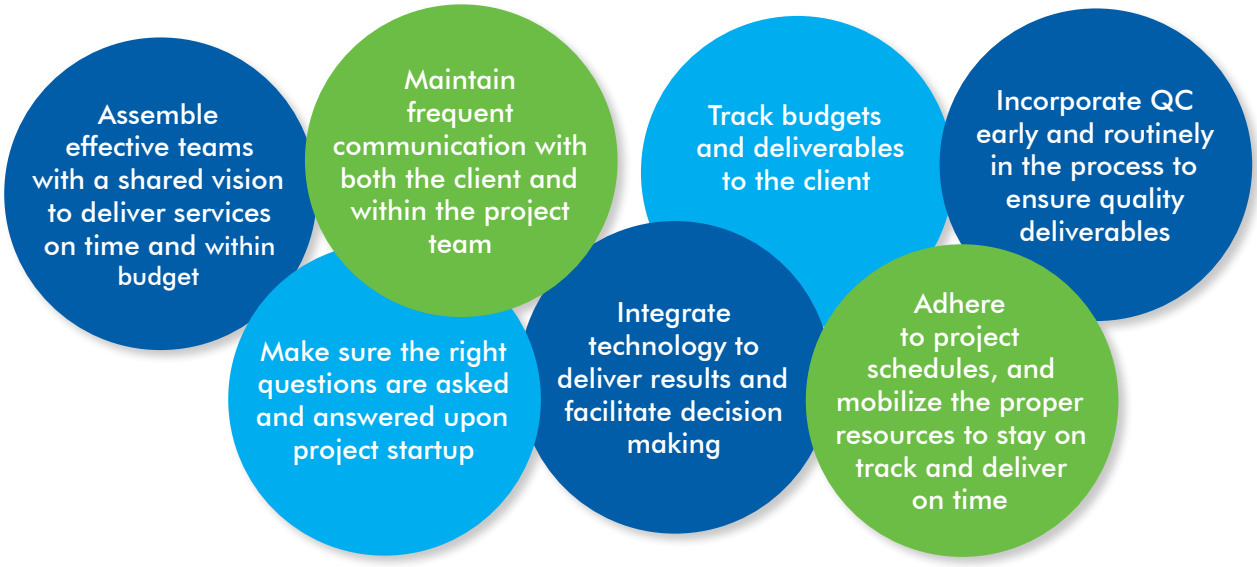


STEP 1: WE FOLLOW A PROVEN OVERALL APPROACH FOR SUCCESSFUL SCHEDULE AND COST CONTROL

Carollo has rigorous procedures for project management. These procedures are time tested and used on all our projects. That consistency contributes to the success of our ability to maintain schedules and budgets. Key elements of our management approach include:

- Emphasis on communication with the client and within the project team–keep everyone on the same page, do it once and do it right.
- Key senior staff involvement for quality control–take advantage of the experience of our staff.
- Frequent comparison of planned-versus-actual budget and schedule–know where a project is at all times, avoid surprise, and immediately address slippage.

Inherent to our project delivery approach is the fact that Carollo has the commitment of each of our Project Managers to follow our procedures on each and every project. Further, each project has an advisory team to monitor the work progress and provide technical overview to promptly resolve concerns before they become significant and cause delays.



Carollo's Project Managers are committed to the multitude of responsibilities that make are projects successful.

Schedules are established by identifying project milestones and determining when each task must be complete to meet the milestone dates. The schedule is reviewed to determine staff requirements to complete the project on schedule. If a project is needed on a fast-track, more staff are assigned than for a project with a longer schedule.

Each month, our project manager will assess the percent complete for the project. The percent complete is estimated on a per-task basis, in a defined manner, and is done independently of budget review. Budget status is not provided to the project manager until after the percent complete has been estimated.

The estimated percent complete is compared to the planned percent complete to determine if the project is on schedule. If the project is not on schedule, staffing adjustments or other corrective measures are implemented.

To monitor project progress, the project labor-hour budget is fit to the project schedule to form an "S-curve". The "S-curve" is a graphical illustration of the project plan, showing how the project will be completed on time and within the labor-hour budget.

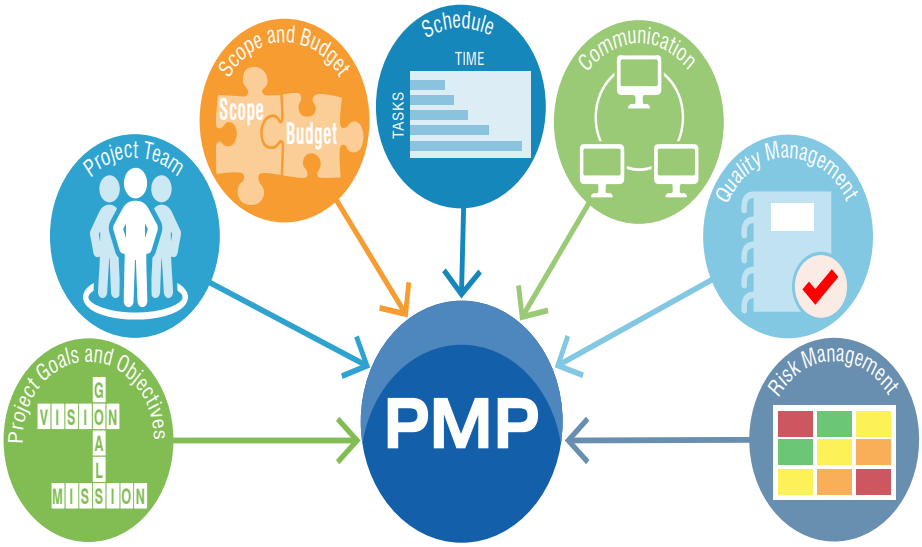
Each month, the percent complete is plotted on the S-curve to compare actual project progress to planned progress. If the actual progress falls behind the planned progress, corrective measures are identified and implemented.

Summary reports of our progress graphically depicting this information will be shared each month with our project manager, along with a discussion of any concerns, action items, and upcoming activities.

STEP 2: EVERY PROJECT BEGINS WITH A PROJECT MANAGEMENT PLAN

Every project begins with preparing a Project Management Plan (PMP). The PMP is a powerful communication tool that helps our project manager coordinate our work effort, control the project, and meet the expectations of the stakeholders and your staff.

The PMP is created during the initial planning of the work, and serves as the basis for development of the final work product and all related documents. Once the final PMP has been accepted, the document becomes a dynamic planning tool for successful project delivery.



The PMP is a dynamic tool for successful project delivery.

STEP 3: MAKE USE OF TRACKING AND RESOURCE MANAGEMENT TOOLS

Carollo understands that "time is money" and schedules are important. Carollo will develop a project schedule as part of our efforts to track expected performance against actual project execution. These project schedules can range from simple Excel bar charts to MS Project scheduling depending on the complexity of the project.

At Carollo, efficient resource utilization is paramount to meeting schedules. Our experienced, expert staff is our greatest asset for schedule control. Our fundamental staffing approach is to assemble the best qualified team to match the project requirements. Labor hours and budget are then estimated by reviewing the project scope and schedule against the staffing levels and budgets of similar projects. This will determine the staffing level required to complete each task by the milestone date. A database of staffing needs and current assignments is maintained and updated frequently, both in our local Coral Springs office and company-wide. Specifically, staff assigned to this contract will reserve a percentage of their available time for work on City projects. This ensures that they will be available to respond to intermittent assignments as the need arises.

STEP 4: KEEP YOU IN THE LOOP – PREPLANNED MEETINGS AND WORKSHOPS

Our most direct way to communicate with you will be through meetings. At important decision points, we will conduct meetings to present critical information regarding the project to City user groups, engineering staff, and other affected parties, and reach a consensus. Our experience shows that building consensus with user groups is integral to any successful project. We are here to serve your needs.

For each project meeting or workshop, we will prepare an agenda ahead of the meeting. We will prepare meeting notes and decision logs for each meeting to document the discussion, including decisions made. Meeting on a more frequent and informal basis with project team members, as required to assist in the decision-making process.

Finally, we choose our Project Managers for their ability to communicate with your Project Managers. Those day-to-day discussions can be equally important to formal meetings to keeping our team informed and headed to the desired endpoint.

STEP 5: ADHERE TO OUR QA/QC PROCEDURES – AVOID WRONG TURNS AND REWORK

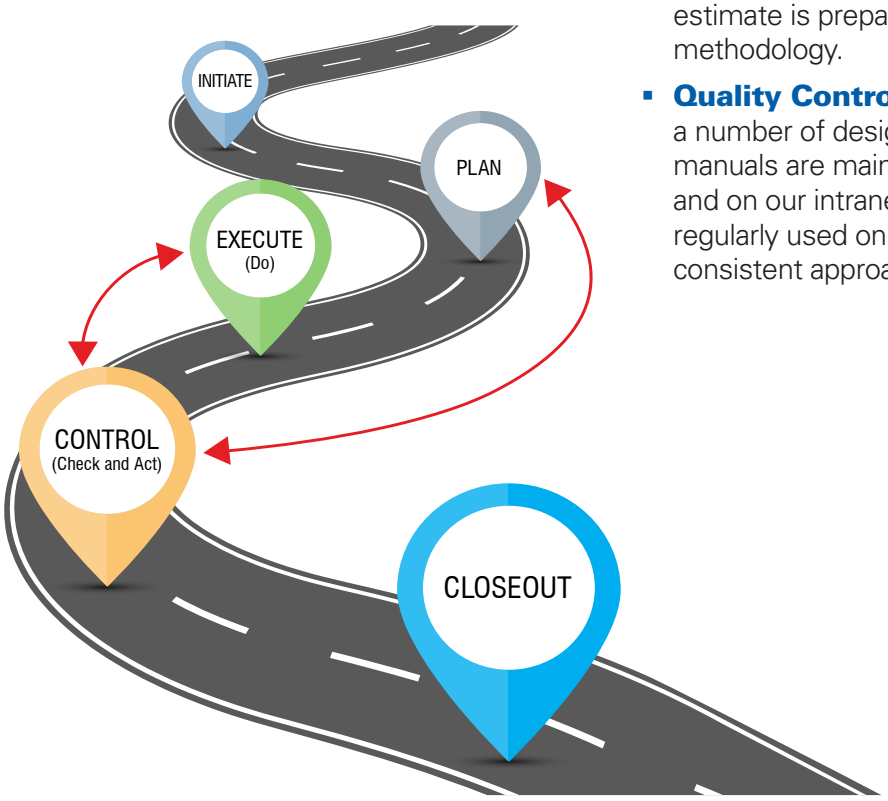
QUALITY MANAGEMENT APPROACH

Before a project begins, the project manager is responsible for preparing a project checklist. This form lists various project steps and guides the project team to identify the quality management steps and to document their completion. The checklist helps confirm that the project follows our quality management procedures. Some of the areas we include in our quality management checklist are:

- **Pre-Contract Planning.** Before a proposal is submitted, we plan how we will complete the work. This includes understanding the project goals, selecting the project team, developing or refining the project scope, and

establishing a budget that adequately reflects the level of service requested and expected by the client. Contracts are reviewed internally, prior to being executed, and two signatures are required, with one of these signatures coming from a senior manager in the firm.

- **Special Requirements.** Special requirements that can impact the project are identified. This can include special permits and regulatory approvals that could affect schedule, teaming arrangements, project delivery issues, or any other issue that is not normally part of our project procedures.
- **Work Plan.** A work plan is developed for each project. The work plan establishes the work sequence effort, when work needs to occur within the project schedule, meeting times, discussion topics at the meetings, key decisions that need to be made, and the project deliverables.



TOTAL QUALITY MANAGEMENT FROM START TO FINISH... Our approach will focus on quality throughout all phases to deliver a project that is correct, on time, on budget, achieves the scope, and meets or exceeds your expectations.

- **Project Management Plan.** The project management plan includes lines of communication, schedule, scope, budget, staffing plan, and special requirements. The project management plan is distributed to the entire design team.
- **Specific Project Checks.** Projects receive a series of reviews at various project points. These include a concept review at the 10-percent level, a peer review at the 10- to 25-percent level, owner review at set milestones, constructability reviews (for design projects only) at the 50- and 95-percent levels, and a detailed check at the 90-percent level.
- **Independent Final Checks.** Senior engineers who have not been involved in the final deliverable of the project provide an internal review. The deliverable is "red-lined" using established checking procedures. The check includes an inter-discipline review. As applicable, a final cost estimate is prepared using our established methodology.
- **Quality Control Tools.** Carollo developed a number of design aid manuals. These manuals are maintained both as hard copies and on our intranet. These documents are regularly used on our projects to provide a consistent approach to quality management.

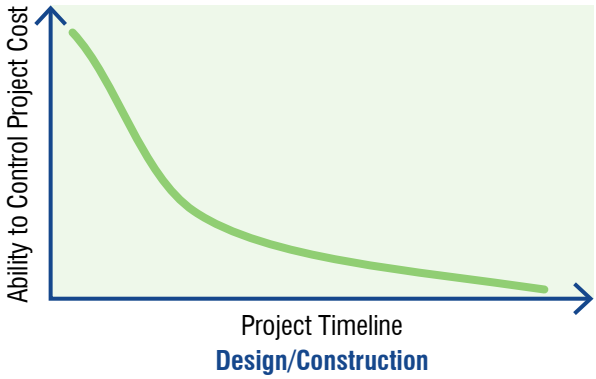
STEP 6: MANAGE CAPITAL COSTS – DESIGNING TO YOUR BUDGET

We strive to emulate our mission statement:

"Dedicated to creative, responsive, quality solutions to those we serve."

We work collaboratively to design systems that best serve your goals and needs, and that includes controlling costs on our projects. Nothing can delay a project or schedule more than having to redesign to meet a budget. Often, we know that cost discussions are not always easy, and what you need versus what you want and can afford don't always coincide. That's where innovative ideas and creativity are incredibly useful to bridging that gap.

We also assign an operations specialist to review the design details and include user group meetings with your staff during the course of our projects. These reviews ensure that our projects are headed in the right direction. Designing the "right" project is important for meeting costs and budgets. Also, these reviews make sure that our designs are easy to build and operate, and are a long-lasting asset to the community.



The ability to influence the project is highest in the early phases, which is why you want the project leader to be the engineer.

Finally, working collaboratively from a project's onset is hugely important. As shown in the graphic below, the best time to control project cost is during the conceptual design phase. As a project progresses, it is very difficult to impact costs.

Project success is as dependent on cost management as it is on technical quality. Carollo has an excellent track record in completing studies, facility plans, and design work within our engineering budget. Of more importance to you, is our expertise at preparing realistic construction cost estimates during the planning and design phases.

For planning-level projects, we have developed and use a set of cost curves for each major process structure in a treatment facility based on the schedule of values developed by the contractors in preparing their cost-loaded schedules.

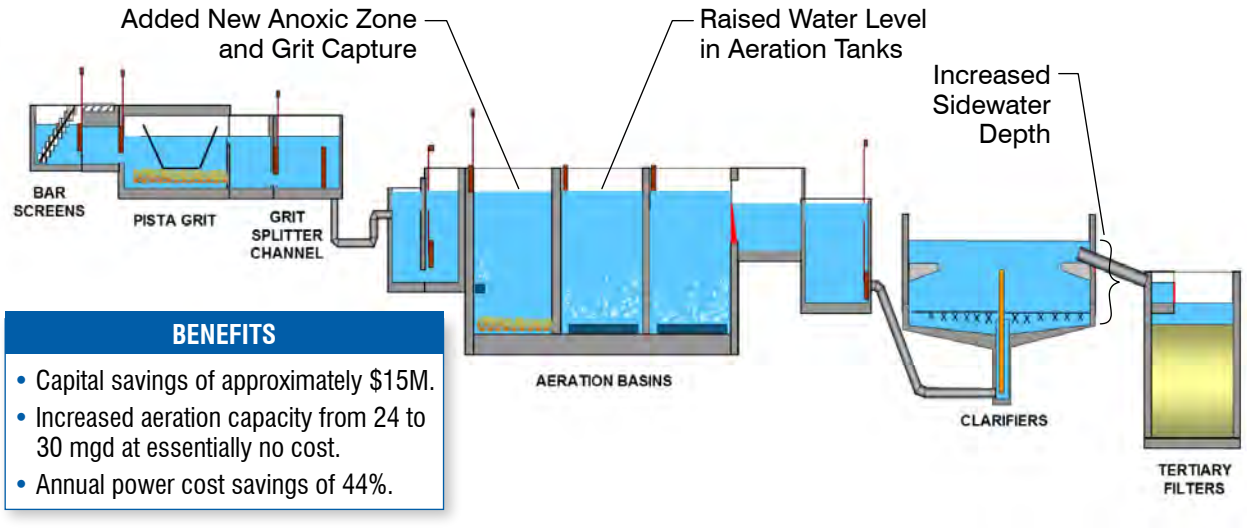
Once a project cost is prepared at the predesign phase, we then prepare updates and continually track cost impacts throughout the design period. As project decisions are made, we attempt to identify the cost impact of that decision. We prepare detailed 30 percent design submittal documents, the cost of which will be estimated by Carollo's in-house cost estimation expert and checked against an independent estimate performed by a contractor experienced with the construction of similar facilities.

For Carollo's most recent large wastewater projects with a total construction cost of $225M, **our change orders totaled less than 1.5 percent** (which includes owner initiated additions to the projects). This is low compared to the industry average of 4 to 5 percent.

CASE STUDY: Thinking Differently to Discover Hidden Capacity And 5percent Annual Energy Costs Savings Undiscovered For 26 Years At The SCRWWTP

The South Central Regional Wastewater Treatment Plant (SCRWWTP), located in Delray Beach, was constructed with a capacity of 12.0-mgd annual average daily flow in 1979, and later expanded to 24.0-mgd in 1987. Similar to the District's facility, the SCRWWTP has a process consisting of influent screens, grit removal in a Pista Grit system, aeration, and secondary clarification followed by tertiary filtration. The SCRWWTP had mechanical aeration that was later converted to fine bubble diffusers in 1992.

As part of the aeration system replacement project, Carollo was challenged with increasing the treatment capacity. In evaluating the hydraulic profile, the project team discovered an available 2.3 foot sidewater depth in the aeration basins that was undiscovered for 26 years. The sidewater depth could that be raised by a simple increase in the effluent weir elevation. The sidewater depth increase resulted in a 25 percent capacity increase, an annual power cost savings of 4 to 5 percent, and an approximate $15M capital cost savings.

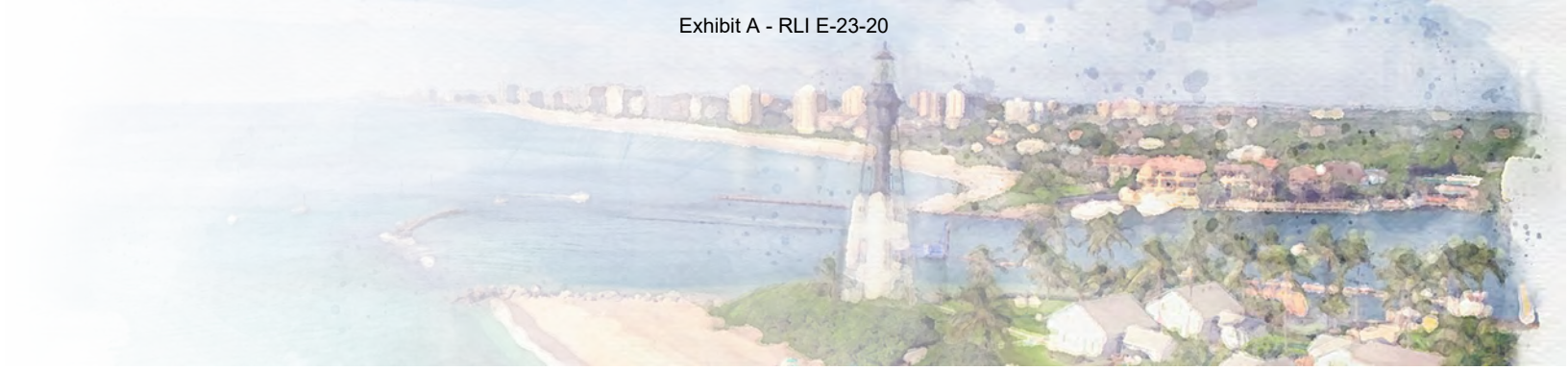


BENEFITS

- Capital savings of approximately $15M.
- Increased aeration capacity from 24 to 30 mgd at essentially no cost.
- Annual power cost savings of 44%.

Plant profile for South Central Regional WWTP D/B Aeration/Capacity Improvements.

• *SECTION 2: SCHEDULE*



Schedule

We believe that an experienced team led by a Task Order Manager with excellent communication skills will keep your work on schedule.

As this is a Continuing Services Contract, we cannot prepare a schedule for the unidentified tasks. However our best proof of our ability to meet schedules is on past projects for the City, as they have all been delivered on time as shown in the following table.

DEMONSTRATED ABILITY TO COMPLETE CITY PROJECTS WITHIN BUDGET AND ON TIME

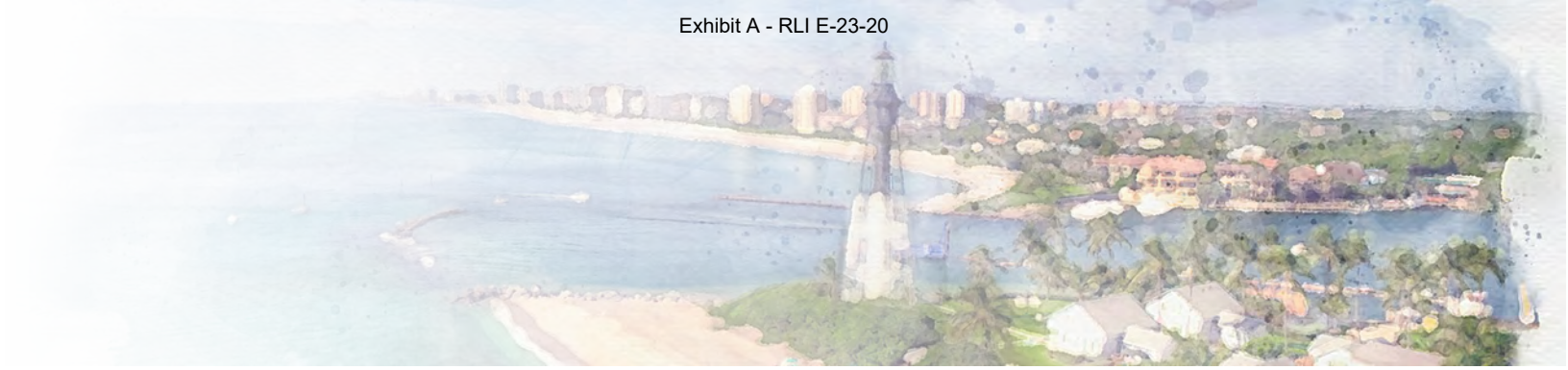
PROJECT	ROLE	ENGINEERING BUDGET		KEY DELIVERABLE	DELIVERABLE ON TIME?
		INITIAL	FINAL		
Concentrate Pipeline Assessment	Prime	$13,500	$13,500	Technical Memorandum	Yes
Design of Membrane Concentrate Pipeline	Prime	$46,859	$46,859	Construction Documents	Yes
Electrical Master Plan - Phases I and II, and Design	Prime	$222,995	$227,995	Technical Memorandum	Yes
Lime versus Nanofiltration Water Treatment Plant Evaluation	Prime	$51,845	$51,845	Technical Memorandum and Construction Documents	Yes
Concentrate Blending Study	Prime	$24,983	$24,983	Technical Memorandum	Yes
Electrical Master Plan Miscellaneous Design/Construction Services	Prime	$198,000	$198,000	Construction Documents	Yes
Power Supply for the UFO Office	Prime	$26,600	$26,600	Construction Documents	Yes
Reuse Treatment Plant Permit Renewal	Prime	$59,264	$59,264	Permit Submittal	Yes
Transfer Pump Station - Additional Services	Prime	$33,500	$33,500	Construction Documents	Yes
Water Master Plan	Prime	$197,866	$197,866	Master Plan Report	Yes
Water Supply Facilities Work Plan 2018 Update	Prime	$66,046	$66,046	Permit Submittal	Yes
WTP Transfer Pump Station Improvements	Prime	$99,707	$99,707	Construction Documents	Yes
Hurricane Hardening of HSP 5-6 Building	Prime	$71,500	$71,500	Construction Documents	Yes

HOW DO WE MAINTAIN SCHEDULES?

Details on our approach to schedule control in our task orders are shown in Section 1 Technical Approach.

Also, communication between our team and yours is essential to keeping a project on track and avoiding wrong turns. From a project's onset, understanding your goals and objectives will give our team a focus on the endpoint. Then during the project, we emphasize communication between our task order manager and yours, so that changes can be accommodated immediately rather than following project milestones.

• SECTION 3: REFERENCES



References

When you contact our references, we are confident you will hear phrases describing our services that include the words "innovation," "responsiveness," and "integrity."

Carollo prides itself on the continuing relationships that we have developed with our clients. As requested, we have provided example Tri-County references below. Full write-ups of these projects are on the following pages.

We invite you to contact these individuals to verify our responsiveness and quality of service on similar projects.

REFERENCES

CLIENT	PROJECT	CONTACT	PHONE	EMAIL
City of Boynton Beach	*Ion Exchange System Progressive Design-Build*	*Mr. Michael Low*	(561) 742-6403	lowm@bbfl.us
Broward County	*Potable Water Pumping Stations and Storage Tanks*	Mr. Steve Doyle	(954) 831-0862	sdoyle@broward.org
City of Sunrise	*Sawgrass Water Treatment Plant Membrane Element Replacement*	Mr. Timothy Welch	(954) 888-6055	twelch@sunrisefl.gov

ION EXCHANGE SYSTEM PROGRESSIVE DESIGN-BUILD

City of Boynton Beach, FL

REFERENCE CONTACT
Mr. Michael Low, Deputy Utilities Director/Manager, Technical Services
P: 561-742-6403
E: lowm@bbfl.us

PROJECT DATES
2009 - 2017

COST
$10.4M

The City of Boynton Beach, FL owns and operates two water treatment plants: the East WTP (EWTP) and the West WTP. Both facilities utilize the local surficial aquifer (LSA) as a raw water source. A primary driver for the City is directly related to the groundwater withdrawal permit. The City formulated an innovative plan to utilize raw water from the Western Wellfield and treat it with the magnetic ion exchange (MIEX) process.

The Carollo Design Build Group (CDBG) designed and constructed a16-mgd MIEX treatment process to pre-treat water from multiple wells prior to the lime softening process. Using this approach, the project brings together a new organics removal MIEX system for Western Wellfield water with the use of excess treatment capacity for hardness removal and filtration at the EWTP. Permitting, equipment procurement, and instrumentation and control programming were all critical to the project schedule. Key factors in the projects' success included:

- Design. A cost-effective solution to increase capacity and integrate into the existing plant layout.
- Construction. The new treatment process was sited at the existing plant requiring relocation of electrical utilities and the repurposing of existing buildings. Treatment technologies and strategies were evaluated. CDBG assisted the City in determining the best technology to meet their needs.
- Permitting. The City needed the facilities to be operational as soon as possible to provide the necessary additional water treatment wellfield capacity needs. Permits were procured in stages to correspond to the schedule.
- Operations. Construction required six individual plant tie-ins and shut downs that could not interfere with plant operations.

This project received the DBIA's 2018 National Award - Merit for Water/ Wastewater.

POTABLE WATER PUMPING STATIONS AND STORAGE TANKS

Broward County, FL

REFERENCE CONTACT
Mr. Steve Doyle,
Construction Project Management Supervisor
P: 954-831-0862
E: sdoyle@broward.org

PROJECT DATES
2015 - 2020

COST
$5M

Broward County has numerous storage tanks, pumping stations, and chemical feed systems being upgraded. Carollo was selected to complete the planning, design, and construction-phase service for every one of these projects, including the following:

- New 2.5-MG Ground Storage Facility and New High Service Pump Station, Electrical/ Generator Room and Chemical Facilities (District 3A). New variable speed drive pumps, in conjunction with the appropriate control logic, will maintain a relatively stable discharge pressure. Furthermore, the pumps will receive equal use and wear, maximizing the useful life of all four units and providing operations with maximum flexibility. Design complete, project under construction.
- New 5-MG Ground Storage Tank and Existing Storage Tank Repair (District 2A). Construction constraints included maintaining the existing two pump stations in operation and implementing a temporary bypass line to keep the North HSPS in full service during construction. The new 5.0 MG tank will maximize efficiency in operation of the tanks, in addition to providing an additional 3.5 MG of storage capacity. This additional capacity will provide the facility approximately 16 hours of storage at the projected average flow for 2040. Design is complete.
- New 1.5-MG Ground Storage Facility, High Service Pump Station, and Chemical Facility. (District 1B1). The facility is currently comprised of a 1.5 MG finished water storage tank, a high service pump station (HSPS) including four outdoor pumps, a sodium hypochlorite feed system, a diesel engine generator, and a sewer lift station. Design complete, project under construction. New Ground Storage Facility, High Service Pump Station, Chemical Facility, and Water Main Extension (District 1A2). Design assessment, design, and engineering services during construction of the new Ground Storage Facility, High Service Pump Station, Chemical Facility, and Water Main Extension. Site assessment is complete, design pending.
- Carollo was also responsible for construction management of these projects.

SAWGRASS WATER TREATMENT PLANT MEMBRANE ELEMENT REPLACEMENT

City of Sunrise, FL

REFERENCE CONTACT
Mr. Timothy Welch, Director of Utilities
P: 954-888-6055
E: twelch@sunrisefl.gov

PROJECT DATES
2015 - 2017

COST
Design: $679,394
Construction: $3M

The Sawgrass WTP is located at 777 Sawgrass Corporate Parkway in the City of Sunrise. The plant is rated to produce 24 million gallons per day (mgd) of potable drinking water utilizing the nano-filtration process. The existing membrane elements were commissioned in two phases in approximately 1999-2000 and then in 2003-2004 and have been in continuous service since.

This type of municipal drinking water membrane has a typical useful life span of 10 years or more, depending on the type of service, raw water characteristics, chemicals utilized and the maintenance program applied. A replacement project for the existing membrane elements was identified and was implemented in phases as part of the proposed design. In addition to replacing the membranes, an oxidation, pre-filtration, and ion exchange treatment system was needed to treat a bypass flow stream.

These improvements were necessary to maintain satisfactory operations, improve treatment reliability, improve water quality, improve regulatory compliance, and lower water production and system flushing and related costs. Carollo performed the design necessary to prepare a set of bidding documents suitable for use by the City's Purchasing Department to solicit bids in two separate bid packages.

The systems, processes, and facilities the were included in this effort were as follows:

- Membrane Element Replacement.
- Oxidation, pre-filtration, and ion exchange treatment system.
- Permit applications.

PAST PROJECTS WITH THE CITY OF POMPANO BEACH

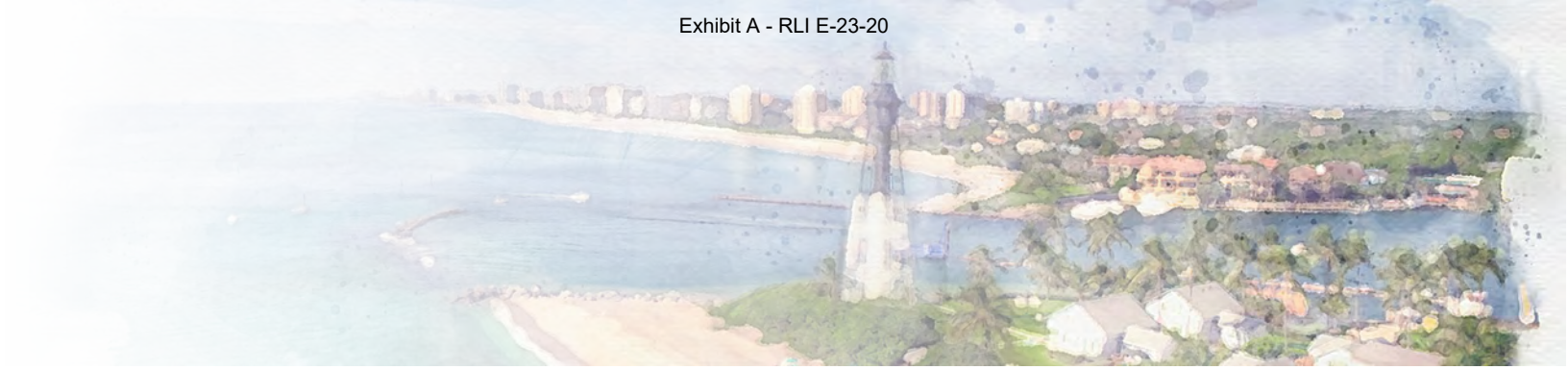
Carollo has successfully completed a number of projects for the City of Pompano Beach since completing the Electrical Master Plan in 2012. Our team is very familiar with your facilities and permitting requirements, and, most importantly, we have established working relationships with many of your staff. As requested, we have summarized our past projects in the table below.

CAROLLO'S PRIOR PROJECTS WITH THE CITY OF POMPANO BEACH

PROJECT	ROLE	ENGINEERING DISCIPLINES	DESIGN FEE
Concentrate Pipeline Assessment – Developed and compared alternatives for disposal of membrane concrete, including adding concrete into a reclaimed water plant.	Prime	C, E, PM	$13,500
Design of Membrane Concentrate Pipeline – Design and permitting of a concrete disposal pipeline.	Prime	C, E, PM, CM	$46,859
Electrical Master Plan - Phases I and II, and Design – Master planning and design for replacement/upgrade of electrical power distribution system for the water treatment plant.	Prime	E, H, S, CM	$227,995
Lime versus Nanofiltration Water Treatment Plant Evaluation – Evaluated bringing the lime softening plant into a 20-year life-cycle condition versus nanofiltration plant expansion.	Prime	A, C, E, H, PM, S	$51,845
Concentrate Blending Study – Evaluation of the blending of demineralized concrete with reclaimed water prior to distribution to the City's reuse customers.	Prime	PM	$24,983
Electrical Master Plan Misc. Design, and Construction Services – Design and construction for electrical system upgrades.	Prime	E, H, PM, S, CM	$198,000
Power Supply for the UFO Office – Design and construction services for power suppy and generator standby power from the WTP to the UFO Office.	Prime	C, E, CM	$26,600
Reuse Treatment Plant Permit Renewal – Renewal of FDEP operating permit for the Plant, which is permitted to treat 7.5 million mgd of reuse domestic wastewater.	Prime	PM	$59,264
Transfer Pump Station Additional Services – Design, permitting, and construction services for pump station modifications, pipe route, and cost estimation.	Prime	A, E, H, PM, S, CM	$33,500
Water Master Plan – Comprehensive master plan update to review costs, water demands, facilities, equipment, and distribution system.	Prime	E, H, PM, S	$197,866
Water Supply Facilities Work Plan 2018 Update – Assessed projected water demands and potential sources of water from 2016 to 2040, and developed a water protection standard for fire flow in the City's service area.	Prime	C, PM	$66,046
WTP Transfer Pump Station Improvements – Redundancy and reliability for the City's WTPs, specifically the transfer of treated water into the clearwell.	Prime	A, C, E, H, PM, S, CM	$99,707
Hurricane Hardening of HSP 5-6 Building – Design of hurricane hardening improvements to the WTP building, including structural evaluation and improvements recommendations.	Prime	A, E, H, PM, S, CM	$71,500
Master Lift Station 21 HVAC Improvements – Investigated and designed a solution of a new split DX unit with new/existing ductwork to meet electrical room and temperature needs.	Prime	CM, E, H, P, S	$30,975

Engineering Disciplines:
A=Architectural, C=Civil, CM=Construction Management, E=Electrical, H=HVAC, P=Plumbing, PM=Process Mechanical, S=Structural

• *SECTION 4: PROJECT TEAM FORM*



PROJECT TEAM FORM

COMPLETE THE PROJECT TEAM FORM ON THE ATTACHMENTS TAB IN THE EBID SYSTEM. PROPOSERS ARE TO COMPLETE FORM IN ITS ENTIRITY AND INCLUDE THE FORM IN YOUR PROPOSAL THAT MUST BE UPLOADED TO THE RESPONSE ATTACHMENTS TAB FOR THE RLI IN THE EBID SYSTEM.

PROJECT TEAM

RLI NUMBER E-23-20
Federal I.D.# 86-0899222

PRIME

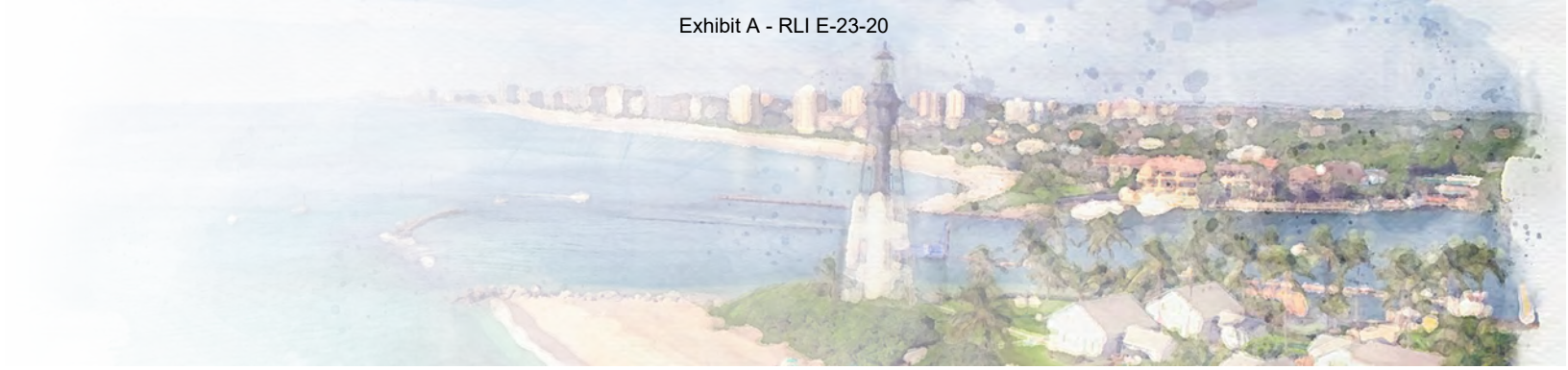
Role	Name of Individual Assigned to Project	Number of Years Experience	Education, Degrees
Client Service Manager	Liz Fujikawa, PE, BCEE, LEED AP	33	MSE Env. Eng. BS Chemistry
Task Manager/ Pumping	Mark Ludwigson, PE	18	MS Eng. BS Eng. Mechanics
Task Manager/ Modeling	Angelica Gregory, PhD, PE	17	PhD Civil MS Civil & Env. BS Civil
Task Manager/ Treatment	Steve Glatthorn, PE	12	MS Env. Eng. BS Civil
Advisory Team	Bob Cushing, PhD, PE, BCEE	30	PhD Civil MS Civil BS Petroleum Eng.
Advisory Team	Lyle Munce, PE	34	MS Sanitary Eng. BS Civil
Master Planning/ Permitting	Laura Baumberger, PE	17	MS Env. Eng. BS Civil BA Spanish
Softening/ Ion Exchange	Vinnie Hart, PE	26	MS Env. Eng. BS Env. Eng. AS Eng. Science
Membranes	Tom Seacord, PE	23	MS Civil & Env. Eng.
Filtration	Patrick Carlson, PE	19	MS Civil & Env. Eng. BS Civil
Residuals	Mark Gross, PE	28	MS Civil & Env. Eng. BS Civil

Reclaimed/ Water Treatment	Rod Reardon, PE, BCEE	42	MS Civil & Sanitary BS Chemical Eng.
Hydraulic/ CFD Analysis	Ed Wicklein, PE	22	MS Civil/Hydraulics BS Civil
Grant Specialist	Seema Chavan, PE	19	MS Env. Eng. BS Civil
Water/Reclaim Treatment	Chris Reinbold, PE	17	MS/BS Civil
Water/Reclaim Treatment	Brian Graham, PE	34	BS Environmental Eng. & Science
Resident Engineer	Terry Storck	26	
Structural Engineer	Joel Smason, PE	44	MS/BS Structural
HVAC/Pumping	Chad Green, PE	11	BS Mechanical Eng.

SUB-CONSULTANT

Role	Company Name and Address of Office Handling This Project	Name of Individual Assigned to the Project
Surveying	Compass Point Surveyors 3195 N Powerline Road, Suite 112 Pompano Beach, FL 33069	Scott A. Reid
Electrical	Gamboa Engineers, LLC 17433 SW 65th Court Southwest Ranches, FL 33331	Mario Gamboa, PE
Architectural	DK Architectural 61 NE 1st Street, Suite 2 Pompano Beach, FL 33060	Andre Capi Blaise McGinley Daniel Suarez
Geotechnical	Quest Engineering Services 2737 NW 19th Street Pompano Beach, FL 33069	Reza Javidan, PE Joseph Simhon, PE

• *SECTION 5: ORGANIZATIONAL CHART*



Organizational Chart

Our team is established: our project delivery skills will meet your schedule and budget needs with our reputation for innovative ideas.

Carollo and the City have a long history of project collaboration that began nine years ago when we did an electrical master plan and served as Owner's Representative for the addition of VFDs at the Water Treatment Plant as part of your City wide energy improvements project. We bring a team with in depth knowledge of your water treatment and distribution, reclaim and wastewater systems and related infrastructure, whose expertise has completed City projects punctually and within budget, while meeting your standards and expectations.

KEY PERSONNEL

We have the breadth of experience needed to meet the upcoming needs of your continuing services contracts. The team will be led by our Task Order Managers, Mark Ludwigson, Angelica Gregory, and Steve Glatthorn. Supporting the Task Managers will be our Client Service Manager, Liz Fujikawa. Liz brings the commitment of the entire Carollo organization and will make sure that the team delivers our task orders to your satisfaction.

MANAGEMENT PLAN

Carollo's management philosophy is founded on simple precepts:

- **Hire and hold on to the best people in the business.** The most critical element for a successful project is the individuals doing the work. Carollo aggressively recruits highly experienced and successful engineers along with the top engineering graduates entering the work force. Our training and mentoring process allows younger engineers to become industry leaders. We also create successful teaming environments by developing communication skills and a commitment to building and maintaining lasting client relationships.
- **Specialize in the planning, design, and construction management of water projects.** This is our core business. Our success hinges solely upon our ability to provide cost-effective and responsive service to our clients.
- **Focus on client service.** Carollo knows the value of listening to our clients and recognizes that successful projects result from our staff working as an extension of your staff. This commitment to listening and valuing client input is the cornerstone of Carollo's 87 years of success. We take pride in the large number of clients with whom we have maintained continuing relationships. We have worked with some clients for over seven decades—validating the quality of our work, cost control, and ability to meet schedules. We strive to live up to our mission statement, *"Dedicated to creative, responsive, quality water solutions to those we serve."*

Our job is to identify your project expectations and determine the best way to deliver them to you.

pompano beach
Florida's Warmest Welcome

CLIENT SERVICE MANAGER
Liz Fujkawa, PE, BCEE, LEED AP

ADVISORY TEAM
Bob Cushing, PhD, PE
Lyle Munce, PE

TASK MANAGERS
Mark Ludwigson, PE
Angelica Gregory, PhD, PE
Steve Glatthorn, PE

ASSESSMENTS

MODELING
Angelica Gregory, PhD, PE

MASTER PLANNING/PERMITTING
Laura Baumberger, PE

SOFTENING/ION EXCHANGE
Vinnie Hart, PE*

MEMBRANES
Tom Seacord, PE

FILTRATION
Patrick Carlson, PE*

RESIDUALS
Mark Gross, PE*

RECLAIMED/WATER TREATMENT
Roderick Reardon, PE

HYDRAULICS/CFD ANALYSES
Ed Wicklein, PE

GRANT SPECIALIST
Seema Chavan, PE*

* Licensed Professional Engineer
Licensed in a State(s) other than Florida.

DESIGN AND CONSTRUCTION MANAGEMENT

PUMPING
Mark Ludwigson, PE

WATER/RECLAIM TREATMENT
Chris Reinbold, PE

WATER/RECLAIM TREATMENT
Brian Graham, PE

TREATMENT
Steve Glatthorn, PE

RESIDENT ENGINEER
Terry Storck

ELECTRICAL ENGINEER
Mario Gamboa, PE

STRUCTURAL ENGINEER
Joel Smason, PE

HVAC/PLUMBING
Chad Green, PE

ARCHITECTURAL
DK Architectural

SURVEY
Compass Point Surveyors

GEOTECHNICAL
Quest Engineering

HOW DO WE MANAGE YOUR DELIVERY?

Carollo utilizes the same standards and practices of project management for every project we undertake, whether it is a small study or the most complex design project. These standards and practices include: quality, safety, schedule management, risk management, claim and control dispute, cost control and estimating, and web-based project management systems.

REPORTING HIERARCHY

Our Task Orders will be led by Mark Ludwigson, Angelica Gregory, and Steve Glatthorn. We have selected three potential task order managers so an appropriately skilled engineer will be available for a particular task order. Mark and Steve are both experienced design engineers. Steve also brings an operations background from the City of Miramar. Angelica is an experience planner and hydraulic modeler.

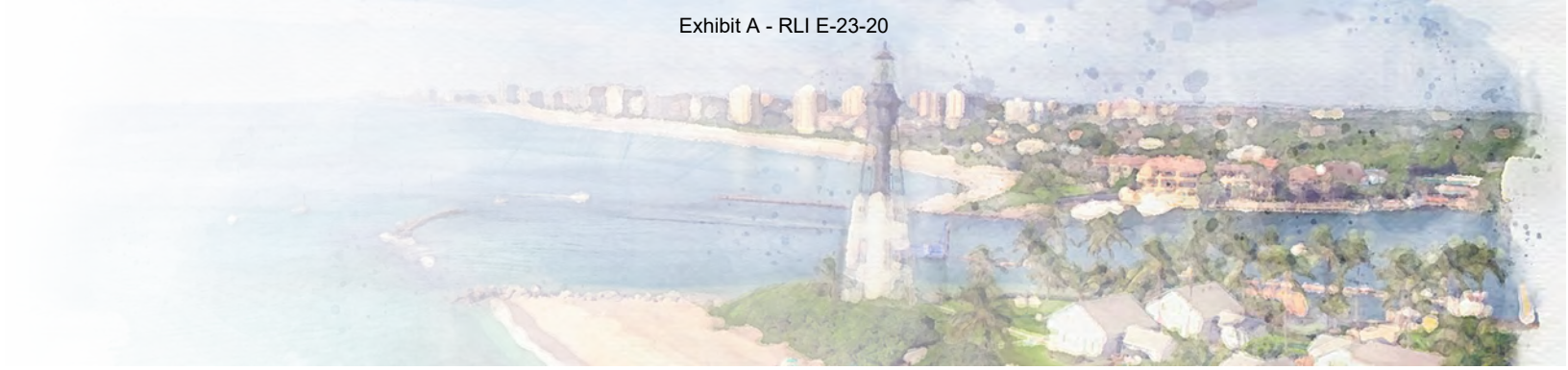
Our task order managers will be supported by our project specialists.

Planning projects will be lead by Angelica and Laura Baumberger. Laura and Angelica have completed Master Plans and hydraulic modeling for the City and other local clients including Boynton Beach, Delray Beach, Davie, Broward County, and Palm Beach County.

Liz Fujikawa, our Client Services Manager, will bring the commitment of the entire Carollo organization to your work—ensuring that our resources are available and also, that you are completely satisfied with our work.

Our advisory team, Bob Cushing and Lyle Munce, provide an overarching review of the work progress as well as being on call for the team.

SECTION 6: STATEMENT OF SKILLS AND EXPERIENCE OF PROJECT TEAM



Statement of Skills and Experience of Project Team

Our established partnership will continue to benefit the City to effectively deliver your projects, on time and on budget, and our innovative ideas will save your capital dollars.

We Know You and You Know Us:

The City of Pompano Beach and Carollo Engineers have had a long partnership that has lasted over nine years and has included many projects such as the City's Electrical Master Plan and Design, Hurricane Hardening at the Water Treatment Plant, Assessment of Lime Softening versus Nanofiltration, Water Master Plan, WTP Transfer Pump Station Improvements, as well as other projects listed in the Schedule section. Numerous team members, including Liz Fujikawa, Mark Ludwigson, Mario Gamboa, Angelica Gregory, and Laura Baumberger are all familiar to City staff and have contributed to your previous City projects.

This past experience offers knowledge of your facilities and infrastructure, understanding of your long-term goals and operational requirements, and the expertise necessary to deliver any of your projects. Further, the partnership that has grown through the years brings an unmatched commitment to your success. Carollo will not substitute any assigned personnel without the City's prior approval.

We Specialize in Water Engineering Related Services:

The Carollo team provides planning, design, and construction management services for municipalities serving populations ranging from less than 10,000 to several million.

This demonstrated, relevant experience is key when it comes to matching the specific requirements in your RLI. We believe that our focus in water engineering related services will make that difference between good versus outstanding services.

WHAT DO OUR CLIENTS SAY?

"Carollo Engineers, Inc. have performed very professionally, been extremely responsive and brought the most qualified and appropriate personnel to service us and our needs as a client."

— Tim Welch, P.E.

Utilities Director, City of Sunrise, FL

"Carollo Engineers completed evaluations of the Miami-Dade Water and Sewer Department's Hialeah and Preston WTPs followed by planning and design of a 165-mgd NF WTP located in Miami-Dade County's Northwest Wellfield. Their work on the project was exceptional."

— Rafael A. Terrero, P.E.

Former Assistant Director

Water Systems Operations -

Miami - Dade County, FL

"Carollo offered a truly refreshing degree of innovation and client responsiveness. I am confident that if you choose Carollo for your project you will be extremely pleased with that decision"

— David Mattausch, P.E.

Division Director Northeast Utilities

Collier County, FL

KEY PERSONNEL:

The following Carollo key personnel will be responsible for your task orders. They provide the following experience and benefits to the City:

LIZ FUJIKAWA, PE, BCEE, LEED AP

CLIENT SERVICES MANAGER

Liz has extensive engineering experience for south Florida clients, including: reclaim distribution and wastewater collection (City of Boynton Beach), the design of an ion exchange system, softening optimization (City of Boynton Beach), filter upgrades and four log treatment assessment (City of Delray Beach); potable water pumping and storage (Broward County); and aeration and capacity improvements (South Central Regional Wastewater Treatment Plant). stormwater collection and pumping and lift station rehabilitation (City of Delray Beach), distribution system and collection system expansion and replacement (City of Margate) and potable water pump stations and storage tanks (Broward County).

MARK LUDWIGSON, PE

TASK MANAGER/PUMPING

Mark has expertise in water and wastewater systems and is a trusted source for civil, mechanical, and process design. Throughout his career, he has worked on a variety of projects for the City as well as Broward County, Margate, Sunrise, Delray Beach, and North Miami Beach. These projects include several general engineering services contracts where Mark collaborated with clients to lead studies and designs, as well as standalone treatment plant and infrastructure projects. Mark is currently completing the design and construction phase management for improvements to the City's transfer pump station at the water treatment plant.

ANGELICA GREGORY, PHD, PE

TASK MANAGER/MODELING/PERMITTING

Angelica has created and updated hydraulic models, performed field testing and calibration, and assisted with the development of capital improvement projects for utilities such as Boynton Beach and Palm Beach County. Her experience incorporates hydraulic modeling for water, wastewater, stormwater, and reclaimed water for the prioritization of pipeline rehabilitation and replacement, water quality improvements, and model conversion and expansion. Angelica has just completed the City's Water Master Plan.

STEVE GLATTHORN, PE

TASK MANAGER/TREATMENT

Steve joined the Carollo team in 2019. He possesses a Master's degree in Environmental Engineering with a focus on Environmental Process Engineering. With over 11 years of experience, Steve has primarily concentrated on water treatment processes, and has worked with Boynton Beach, Margate, Delray Beach, and Pembroke Pines. Steve recently worked on the City's Water Master Plan and assessed the treatment plants as well as the impacts on salt water intrusion on future water supply.

VINNIE HART, PE

SOFTENING/ION EXCHANGE

Vinnie is known throughout the industry for his innovative and collaborative approach to cost-effective water treatment design solutions. Vinnie brings more than 26 years of experience in the planning, design, and expansion of water supply, water treatment, and water distribution facilities. His areas of expertise include WTP design and operation, ozone and chemical feed, taste and odor, dual media filtration (including biological filtration) for drinking water. Vinnie has served as Carollo's treatment expert for ion exchange, softening and membrane treatment projects for Boynton Beach, Palm Beach County, Sunrise, Fort Lauderdale and Miami Dade County.

ROD REARDON, PE

RECLAIMED/WATER TREATMENT

Rod is a nationally recognized expert in wastewater treatment. He is based in Carollo's Orlando office and is the firm's wastewater process technology lead. With Rod's role at Carollo, he has been able to experience the practices and procedures that become cutting edge technologies at a national level. He recognizes that the treatment process design represents both significant capital and operating costs and has helped clients maximize the efficiency and capacity of these processes to significantly improve operations and reduce cost.

CHRIS REINBOLD, PE

WATER/RECLAIM TREATMENT

Chris is a Vice President with Carollo with 16 years of experience that includes study, design, permitting, and construction administration services for treatment plants, pumping stations, pipelines, and chemical systems. Chris has served as Engineer of Record for treatment plant upgrades for Palm Beach County (ion exchange and filtration), Sunrise (nanofiltration, reverse osmosis and ion exchange), Deerfield Beach (Master Planning for lime softening, nanofiltration and reverse osmosis) and Fort Lauderdale (evaluation of upgrades for the Five Ash Water Treatment Plant).

BRIAN GRAHAM, PE

WATER/RECLAIM TREATMENT

Brian's experience encompasses design and operation of advanced wastewater and water treatment systems. He has extensive experience in biological nutrient removal, RO treatment, biosolids management, master planning, wastewater process modeling and computer simulation. Brian is currently leading Carollo's design of upgrades to a Return and Waste Activated Sludge pump station for the City of Boca Raton.

MARIO GAMBOA, PE

ELECTRICAL ENGINEER

Mario's professional experience spans 39 years of Electrical Engineering experience in the water and wastewater field working for and with Carollo Engineers in projects and municipalities throughout the United States. Mario is currently completing the construction phase management of the City's Transfer Pump Station Improvements.

BOB CUSHING, PHD, PE

ADVISORY TEAM

Bob is a Senior Vice President with Carollo with 30 years of experience in planning and engineering. While Bob has extensive national experience, he has been a resident of the region for 20 years, providing strong local commitment with broad expertise and perspective. He has been responsible for numerous successful water planning and design projects, as well as studies and programs for improving distribution system water quality.

LYLE MUNCE, PE

ADVISORY TEAM

Lyle is a senior project manager with over 32 years of experience providing planning, design, and construction management services for multi-disciplinary municipal water infrastructure and treatment facility projects. Lyle's areas of expertise include: membrane treatment; ion exchange treatment; lime softening treatment; raw and finished water quality analysis; water production and concentrate injection wells; planning; and permitting, design, and construction of water treatment and infrastructure facilities.

We served numerous client agencies in Southeast Florida; many of whom we work for via a continuing services contract with over 90% renewal rate.

PREVIOUS EXPERIENCE OF THE PROJECT TEAM

The personnel selected for this project team have worked on many similar projects together. Below is a table highlighting some of their water/reuse engineering experience in the past five years.

CLIENT	PROJECT NAME/SCOPE
WATER TREATMENT STUDIES AND DESIGN	
Fort Lauderdale	GAC Pilot and Plant Evaluation at Fiveash WTP– Evaluated the existing Fiveash WTP to determine how best to treat the water in the future. Project included assessment of existing facility, desktop investigations, bench scale treatment studies, alternate facility location study, water supply evaluation, and cost estimating.
Boynton Beach	Design/Build of Ion Exchange System– Designed and constructed a 16-mgd MIEX treatment process to pretreat water from multiple wells prior to the lime softening process.
Manatee County	Water Treatment Plant Filter Upgrade Study– The project selected a UF membranes hydraulic configuration (submerged or pressure)best suited for retrofit of the existing multi-media filters.
Collier County	SCRWTP CAP - Water Quality & Treatment Improvements Study– Developed a roadmap for future plant improvements to cost effectively improve water quality and meet future regulations.
Sunrise	Sawgrass WTP Membrane Replacement, Acid Modifications, Ion Exchange, and Other Improvements- This project includes preparation of two bid packages. The first is to replace the nanofiltration membrane elements for the existing 24-mgd treatment plant and demolish and replace the sulfuric acid pumps. The second is to install an oxidation pre-filtration, and IX system to treat surficial aquifer water for iron, control color, and reduce organics.
Delray Beach	Filter Upgrades- Fast track design and construction management of filter media replacement for the WTP.
Broward County	Chemical Feed Upgrades- Design improvements to multiple chemical systems at the District 2A Lime Softening Water Treatment plant.
Boynton Beach	Lime Softening Optimization- Evaluated performance upgrades for the solids contact clarifier through jar testing and full scale operation testing.
Margate	East Plant Improvements- Designed improvements to lime sludge dewatering system.
Palm Beach County	Water Treatment Plant 2 Filter Replacement– Designed, permitted, and bid a water treatment filter addition at WTP 2.
Delray Beach	4 Log Study- Evaluate alternatives for 4 log compliance for the lime softening plant using a combination of chlorine and chloramines.

RECLAIM SYSTEM PLANNING AND DESIGN	
City of Tampa	Augmentation Project 30% Design– Conducted additional investigations required for the implementation of a 50-mgd TAP recharge/ recovery system and developed 30 percent design plans of the system. Services included: public outreach, groundwater quality, survey, geotechnical investigations, and plan sheets.
City of Boynton Beach	Owner's Representative for Design-Build of Reclaimed Water Expansion – Hydraulic model updates, system evaluation, line sizing, route analyses for phasing options, optimization for future build out, and phasing/connection plan for future customers.
City of Orlando	Lake Nona Reuse Main Design – Route analysis and preliminary design to replace the existing reuse main with a 12-inch ductile iron pipe to comply with water demands and City standards.
Broward County	Reclaimed Water System Modeling and Design Expansion – Construction and calibration of the County's Regional Collection System hydraulic model, development of a transient model for the system's pressure surge analysis, and condition assessment of 11 master pump stations, and CIP development.
City of Tampa	Design Services for Augmentation Project Implementation – Design of a UV treatment system, new transmission pipeline, collection system evaluation and design, and enhanced source control program to target parameters of interest based on water quality evaluation.
Town of Davie	Wastewater Collection, Reclamation System and Distribution System Master Planning – Utilities comprehensive master plan, hydraulic modeling, and rate study to plan for future needs for the water, wastewater, treatment, and storage systems.
Palm Beach County	Lyons Road Utility Improvements from Atlantic Avenue to Hyder PUD – Design, bidding, and construction for design improvements to 20-inch reclaim line, storm water, sanitary sewer, potable, and reuse water for the Lyons Park Neighborhood.
South Central Regional Wastewater Treatment and Disposal Board	SCRWWTP Capacity and Aeration System Improvements- Study and design for improvements to the WWTP. Project included addition of anoxic selectors, replacement of blowers and diffusers, increase of sidewater depth, allowing increase of the capacity from 24 to 30-mgd AADF of the tertiary treatment plant.
Pinellas County	Dunn WRF Reclaimed Water Meter Replacements– Provided engineering services to produce design documents for meter replacements.
Orange County Utilities	Meadow Woods Reclaimed Water Model Calibration and Alternatives Analysis – Provided engineering and hydraulic modeling services to evaluate the ability to supply the Meadow Woods development and surrounding area to evaluate low pressure problems and to address hydraulic requirements such as future storage and pumping at the Meadow Woods site.
Pinellas County	South County Reclaimed Water Master Plan– Develop detailed, solutions to provide more reliable reclaimed water (RCW) service to existing customers, specifically Tierra Verde and St. Pete Beach. Also developed long term strategies to ensure reliable future service to existing RCW customers and potential customers while working towards reducing discharge to surface water.
Manatee County	Reclaimed Water Master Plan Update– Updated the previous Master Plan by providing hydrogeological services to review and potentially modify the groundwater monitoring plan for the County's Master Reuse System permit.
Progressive Water Resources	Reclaimed Water Evaluations Braden River– Conducted a planning and engineering evaluation of the incorporation of reclaimed water into Braden River Utilities (BRU) as an alternative irrigation source.
Altamonte Springs	Potable Reuse Pilot Study– The project, called pureALTA, took reclaimed water and treated it to meet or exceed all drinking water quality standards without using expensive, energy-consuming reverse osmosis.
Pasco County	Land O' Lakes Odessa Valve Farms – Condition assessment of 24- and 30-inch gate valves at the County's reclaim system "valve farm" at the Land O' Lakes WWTF.

SUBCONSULTANTS

Carollo has selected an exceptional lineup of subconsultants to complement the technical expertise of our staff. We have provided brief firm profiles for each subconsultant, demonstrating the expertise each brings to the Team.

GAMBOA ENGINEERS, LLC | ELECTRICAL ENGINEERING

CERTIFIED MBE

Gamboa Engineers, LLC is a consulting firm specialized in planning, designing, and engineering support during construction of electrical power distribution, process controls and instrumentation systems with focus in support of water treatment/distribution facilities and wastewater treatment facilities. The firm also has a broad range of experience in system integration and designing SCADA system for monitoring and control of geographically dispersed water and wastewater pumping facilities.

Gamboa Engineers provides a safe, economical and functional design; satisfying the customers needs on time and on budget. The firm has strong analysis and design capabilities with a broad range of experience and in-depth knowledge of construction and maintenance.

Gamboa Engineers has been working with Carollo on City projects for the past nine years including: Electrical Master Plan for the Water Treatment Plant; Transfer Pump Station Improvements; Master Lift Station HVAC Improvements; and Owner's Representative for Energy Improvements at the Water Treatment Plant.

DK ARCHITECTS | ARCHITECTURE, SITE PLAN, PERMITTING

CERTIFIED SBE AND LOCAL BUSINESS

DK Architects is an architecture design firm located in Pompano Beach. They have been in Florida for 40 years, and, because of this and their deep understanding of local needs, they are one of the most trusted firms in the area. DK Architects provides a wide range of services, including fast tracking, value engineering, construction management, prototype development and project feasibility. Additionally, their architectural firm can also provide inspections, windstorm certifications, and site assessments.

DK takes great pride in its history of collaboration with the City of Pompano Beach, including Continuing Services Contracts with both the City and the Pompano Beach CRA, successfully completing projects, such as Briny Avenue Streetscape and Undergrounding, BaCA and Ali Cultural Center adaptive re-uses and new construction.

COMPASS POINT SURVEYORS, PL | SURVEYING

CERTIFIED SBE AND LOCAL BUSINESS

Compass Point Surveyors is a modern survey firm that uses the latest technology to provide their clients with the best service in the most efficient manner possible. Established in 2006, Compass Point provides surveying services from the Florida Keys north to the City of Jupiter. Field crews regularly use GPS receivers, robotic total stations and data collectors linked to their office staff with cell phone WiFi. They use the latest CAD software and surveying modules to produce accurate and encompassing plans, digital files, and CAD drawings.

Compass Point is experienced in preparing boundary, ALTA, title, topographic, construction, route, design and quantity surveys in addition to preparing legal descriptions and elevation certificates. Their team has almost 80 years of field and office surveying experience certificates. Their team has almost 80 years of field and office surveying experience.

QUEST ENGINEERING SERVICES & TESTING | GEOTECHNICAL

CERTIFIED MBE AND LOCAL BUSINESS

Quest Engineering Services & Testing, Inc. (QuEST), located in Pompano Beach, was founded in 1998 by R.N. Sailappan, P.E. Prior to that, R.N. was the branch manager of a large nation-wide engineering firm in Fort Lauderdale. QuEST was established to provide the complex engineering services and capabilities of a large firm, but with the personalized service and attention to detail of a small firm.

QuEST provides geotechnical services, including investigation of subsurface conditions and materials, assessing risks posed by site conditions, design of earthworks and structural foundations, and monitoring of site conditions and earthwork and foundation construction. They have successfully completed large commercial, educational, and residential projects as well as municipal projects throughout South Florida.

CURRENT AND PROJECTED WORKLOAD

WORKLOAD/AVAILABILITY OF OUR FIRM

The key team members identified for your project will be supported by 24 staff in our local offices backed by 1,100 staff nationwide. Our offices are all networked and work sharing is easily and routinely accomplished.

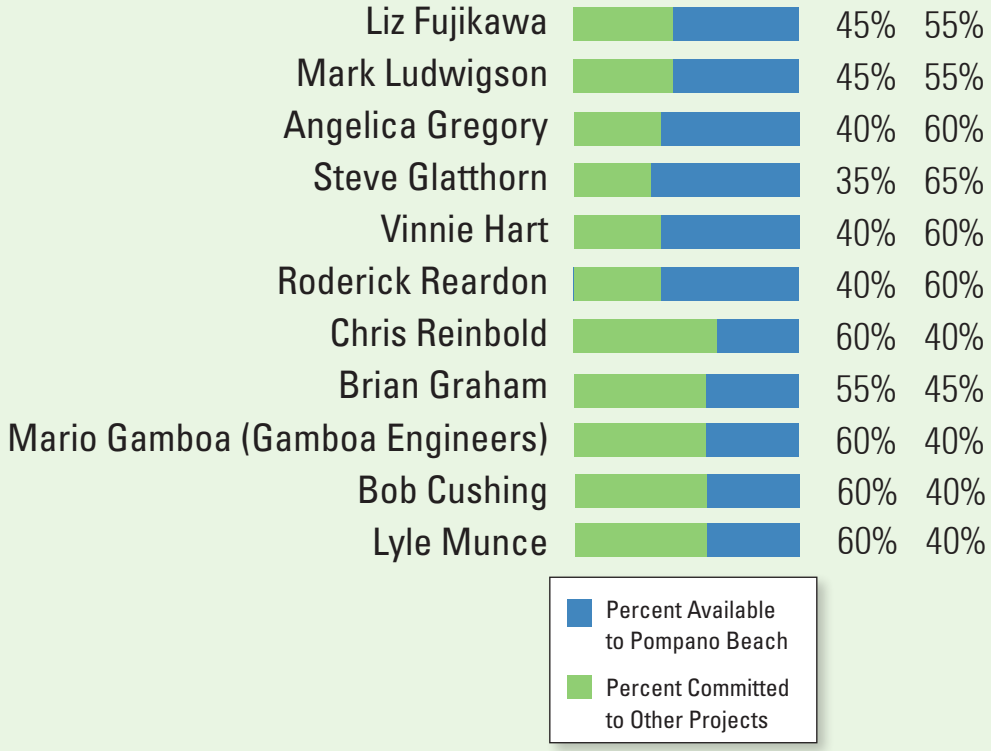
Our firm-wide workload that is committed to active and pending projects typically averages about 65 percent. As a result, we have more than ample capacity to respond to our client's needs regardless of the size and nature of the work.

We are confident that our key team members and firm have the capacity and resources to deliver your projects within your desired time-frame.

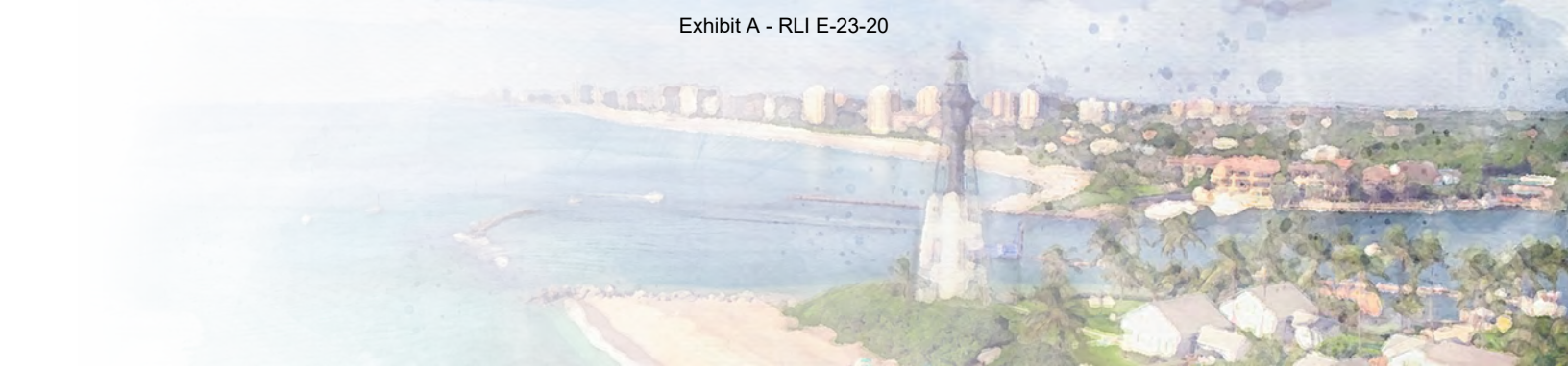
WORKLOAD/AVAILABILITY OF OUR PERSONNEL

The graphic below summarizes each staff member's availability to participate on your task orders. The level of availability indicated in this graph shows that staff have ample capacity for your work and that we can hit the ground running.

EXISTING AND PROJECTED WORKLOADS/PERCENTAGE OF AVAILABILITY



• SECTION 7: RESUMES OF KEY PERSONNEL



Resumes of Key Personnel

Each team member has demonstrated experience that comes only from years of practice in their respective disciplines and the creativity and drive to find a successful solution by thinking outside the box.

On the following pages, we have provided resumes for key personnel for both Carollo (the prime) and our subconsultants.

We have a provided mini-bios for Carollo's key team members and brief descriptions of our subconsultants' firm profiles in Section 5 Organizational Chart.

KEY PERSONNEL

Liz Fujikawa, PE, BCEE, LEED AP

Mark Ludwigson, PE

Angelica Gregory, PHD, PE

Steve Glatthorn, PE

Vincent Hart, PE*

Rod Reardon, PE

Chris Reinbold, PE

Brian Graham, PE

Mario Gamboa, PE

Bob Cushing, PE

Lyle Munce, PE

* Registered in a state other than Florida

Elizabeth Fujikawa, P.E., BCEE

Elizabeth Fujikawa, a vice president with Carollo Engineers, has more than 32 years of engineering experience. She has served in roles ranging from project manager, technical specialist, to principal-in-charge for municipal clients. Her experience includes studies through construction management for projects with capital construction costs of up to $240 million, including two of the U.S.'s largest treatment plants: Chicago's Jardine Water Plant (1,000-mgd), and the Metropolitan Water Reclamation District of Greater Chicago's Stickney Water Reclamation Plant (1,200-mgd).

Education

MSE Environmental Engineering, University of Michigan, 1986

BS Chemistry, University of Illinois, Urbana-Champaign, 1984

Licenses

Professional Engineer, Florida, Illinois, Wisconsin

Civil Engineer, Delaware

Certification

LEED Accredited Professional, Green Building Certification Institute, 2006

Professional Affiliations

American Water Works Association

International Ozone Association

Relevant Experience

→ Project manager for the Broward County Potable Water Storage Tanks, Pumping Systems, and Chemical Systems. This project includes the assessment, design and construction phase management of new ground storage tanks, new high service pump stations, and new sodium hypochlorite and ammonia feed and storage systems for disinfection. These improvements will be implemented at four locations within the County.

→ Project manager for a Bulk Sodium Hypochlorite Storage and Feed Facility for the South Central Regional Wastewater Treatment and Disposal Board, Florida, South Central Regional Wastewater Treatment plant. The facility will receive and store 12.5% sodium hypochlorite and meter the feed to the inlet to the tertiary filters for reuse.

→ Project manager for the City of Boynton Beach, Florida, Ion Exchange Treatment System and East Water Treatment Plant Improvements Progressive Design Build. This project includes initial engineering and constructability evaluations, permitting, design, and construction of a 16.0-mgd ion exchange system, associated ancillary systems, and raw water transmission main modifications.

→ Project manager for an evaluation of long range treatment by Lime Softening versus Nanofiltration for the City of Pompano Beach, Florida. The project evaluated advantages and disadvantages to bring the existing lime softening treatment plant into a 20-year life cycle condition versus an expansion of the nanofiltration treatment plant.

→ Project manager for the Central Lake County Joint Action Water Agency, Illinois, Ozone System Upgrade project. The project evaluated Air Fed versus Oxygen Fed (Vacuum Swing Adsorption) alternatives to supply the ozone generators. The project was designed and constructed using packaged Vacuum Swing Adsorption units.

→ Project manager for the Pompano Beach, Florida, Electrical System Master Plan for the water treatment plant. The project consisted of master planning and design services for replacement and upgrade of electrical power distribution system with state-of- the-art equipment and materials.

→ Project manager for the Pompano Beach, Florida, Electrical System Phase I Upgrades. Work included motor control center replacements and installation of new variable frequency drives for the high service pump station. Services include final design and opinion of construction cost, bidding services, construction support services.

→ Project manager for Owner's Representative Services for the City of Pompano Beach, Florida Electrical System energy efficiency project. Served as Owner's Representative during upgrades by Siemens to reduce energy usage at the water treatment facility.

→ Technical reviewer for the Miami-Dade County, Florida, 225-mgd Hialeah-Preston Water Treatment Plant chemical systems improvements.

→ Staff engineer for the Tampa Bay Water, Florida, Hydrogen Sulfide Treatment Improvements at the Lithia Water Treatment Plant. The current hydrogen sulfide removal facility will be replaced with a new, more reliable process. This new 45-mgd hydrogen sulfide removal facility will use ozone treatment and the project will be delivered with the Engineer-Procure-Construction Management (EPCM) approach.

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Elizabeth Fujikawa, P.E., BCEE

→ Technical reviewer for the upgrade of raw water intake zebra mussel and icing control for the City of Evanston, Illinois.

→ Principal-in-charge for improvements to the Village of Wilmette, Illinois, Stormwater Pumping Station. The project included the study and design of improvements to increase reliability and emergency power concerns. The pump station was a critical piece of infrastructure to convey stormwater to the North Branch of the Chicago River and prevent localized flooding. Improvements included utility improvements (transformer and generators) and MCC and load arrangements.

→ Principal-in-charge for drainage improvements for Northern Illinois University's campus. The project included analysis of stormwater quantities, and design and construction management of the improvements: two parallel 72-inch box culverts through the campus as well as multiple detention ponds.

→ Principal-in-charge for the Little Calumet River Detailed Watershed Plan, Metropolitan Water Reclamation District of Greater Chicago. A watershed plan was developed for the Little Calumet River stormwater management area, encompassing 260 square miles with nine subwatersheds. The primary goals of the plan were to: document stormwater problem areas; evaluate existing watershed conditions using hydrologic and hydraulic (H&H) models; produce flow, stage, frequency, and duration information about flood events along regional waterways; estimate damages associated with regional stormwater problems; and evaluate potential solutions that included channel and conveyance improvements, detention, levees with compensatory storage, and streambank stabilization.

→ Project manager for the Rend Lake Conservancy District, 27-mgd Lime Softening Plant Upgrades, Illinois. The upgraded processes include conventional rapid mixing, upflow lime softening clarifiers, and split parallel treatment using microfiltration membranes and conventional dual media filtration. Chemical systems included sodium hypochlorite, aqua ammonia, alum, fluoride, polymer, polyphosphate and lime.

→ Principal-in-charge for the City of Highland Park Water Treatment Plant Upgrade Design, Illinois. Upgrades included raw water capacity improvements (intake and pumping), conversion of portion of the sedimentation basins to low-pressure membranes, and chemical system improvements.

→ Principal-in-charge for planning and design of capacity upgrades to the City of Evanston, Illinois, 108-mgd Water Treatment Plant. Alternatives for capacity upgrades were microfiltration versus the addition/rerating of dual media filters. Design improvements included the rehabilitation of dual media filters, and structural and architectural improvements to the filter process area.

→ Project manager for the Lake Michigan Water Supply Project for the Central Lake County Joint Action Water Agency, Illinois. Responsible for preliminary, detailed designs, and construction-phase management of the raw water intake, pump station, water treatment plant's ozonation system, and booster pump station and standpipes.

→ Project manager for a pilot study for the Central Lake County Joint Action Water Agency, Illinois. Conducted a pilot study for treatment process selection, which included the study of the impacts of ozonation on filtration and water quality and evaluation of dissolved air flotation, a continuous backwashing filter, and granular activated carbon as alternate treatment processes.

→ Project manager for the Central Lake County Joint Action Water Agency, Illinois, upgrade to 60-mgd. Project consisted of the addition of a fourth treatment train including preozonation, rapid mix, flocculation, lamella plate sedimentation, and granular activated carbon filtration.

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Mark N. Ludwigson, P.E.

Mark Ludwigson has 17 years of engineering experience, working exclusively in the water industry as an engineer for projects all over the country and as the lead engineer for a prominent circular clarifier manufacturer. With his passion for water and wastewater systems, Mr. Ludwigson has led to the success of a variety of water projects, whether as project manager or project engineer. He is trusted for civil, mechanical, and process design discipline work.

Education

MS Engineering, University of Wisconsin, Milwaukee, 2010

BS Engineering Mechanics (Structural Analysis Major), University of Wisconsin, Madison, 2001

Licenses

Professional Engineer, Florida, Wisconsin

Certification

Certificate, Project Management Bootcamp, PSMJ Resources, 2017

Certificate, Six Sigma Green Belt, Management and Strategy Institute, 2014

Certificate, Project Management Qualified, Management and Strategy Institute, 2014

Certificate, Quality Management in the Design Organization, American Society of Civil Engineers, Florida, 2014

Certified, 10-Hour OSHA Construction Safety and Health, Safe-Con, LLC, 2013

Certificate, Confined Space Attendant, Entrant, and Entry Supervisor, Symbiont, Wisconsin, 2009

Professional Affiliations

Florida Engineering Society

Florida Water

Relevant Experience

→ Project manager for a new potable water storage tank and pump station at Site 3A for Broward County, Florida. Improvements include a 2.5-MG pre-stressed concrete ground storage tank with special architectural features, 11.5-mgd high service pump station, sodium hypochlorite and ammonium sulfate feed systems, 4-log disinfection system, new wastewater lift station, yard piping, lime pond remediation, and associated improvements.

→ Project manager for a new potable water storage tank and pump station at Site 1B1 for Broward County, Florida. Improvements include a 1.5-MG pre-stressed concrete ground storage tank, 8.0-mgd high service pump station, sodium hypochlorite and ammonium sulfate feed systems, yard piping, special flood hazard area protection, site drainage enhancements, and associated improvements.

→ Project manager for a new potable water storage tank at Site 2A for Broward County, Florida. Improvements include a new 5.0-MG pre-stressed concrete ground storage tank, rehabilitation of an existing 5.0-MG ground storage tank, demolition of two existing ground storage tanks, chemical feed system modifications, yard piping up to 60-inch diameter, and a site drainage enhancements. Design included the layout of a new 30-mgd pump station with four vertical turbine pumps in cans.

→ Project manager for finished water transfer pump station improvements at the City of Pompano Beach, Florida, Water Treatment Plant. The pump station has a rated capacity of 35 MGD and feeds two ground storage tanks. The design includes resizing of five 50-HP vertical mixed flow pumps, the addition of VFDs, an hydraulic assessment, HVAC upgrades, and miscellaneous structural improvements.

→ Project engineer for a new water storage tank and high service pump station at a Naval Air Station in Key West, Florida. Project included a new 0.5-MG glass lined steel tank and a pump station with vertical turbine pumps.

→ Project engineer for the City of Sunrise, Florida, Springtree Water Treatment Plant Phase II Improvements and Rehabilitation project. Work includes rehabilitating the solids contact clarifiers, replacement of a lime silo, concrete repairs, demolition of filters, a new 12-mgd transfer pump station, a new carbon dioxide storage and feed system, thickener supernatant return pipe modifications, and improvements to the lime sludge thickening and dewatering process, including new rotary drum vacuum filters.

→ Project engineer for the City of Sunrise, Florida, Sawgrass Water Treatment Plant Ion Exchange and Other Improvements project. Work includes the addition of a 3-mgd ion exchange treatment system, sodium permanganate feed system, a new chemical building, and a degasifier cleaning system utilizing hydrochloric acid.

→ Project engineer for the City of Sunrise, Florida, Southwest Water Treatment Plant Ion Exchange and Other Improvements project. Mr. Ludwigson designed for the addition of an ion exchange treatment system, lime storage silo, and lime slaker and feed system.

→ Project manager for an evaluation of lime feed improvements for the City of North Miami Beach and NMB Water, Florida. The project involved evaluation of the existing lime feed storage and feed systems. Several upgrade alternatives were recommended, including layouts and cost estimates.

→ Project engineer for construction management services for the Palm Beach

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Mark N. Ludwigson, P.E.

Awards

Kelman Award, Top Magazine Article, Central States Water Environment Association, 2012

Graduate Student Paper Competition Winner, Water Environment Federation, 2011

Quote

Clean water always has been, and always will be, the basis of life on this amazing planet.

County Water Utilities Department, Florida, Water Treatment Plant No. 2 Filter Replacement project in West Palm Beach Florida. This project includes a new filter structure with dual media filters rated for an initial capacity of 16.4-mgd and designed to be high rated to an ultimate capacity of 25-mgd. The filter structure also includes a clearwell, transfer and backwash pumps, air scour blowers, electrical room, and chemical feed connections.

→ Project engineer for construction management services for the City of Sunrise, Florida, Sawgrass Water Treatment Plant Rerate Improvements project. This project includes vertical turbine transfer pump replacements to increase rated pumping capacity from 32-mgd to 40-mgd. It also includes upgrading the sodium hypochlorite metering pumps and replacing the plant air compressor.

→ Project engineer for the City of Sunrise, Florida, Southwest Water Treatment Plant Ion Exchange and Other Improvements project. Mr. Ludwigson designed for the addition of an ion exchange treatment system, lime storage silo, and lime slaker and feed system.

→ Project manager for the City of North Miami Beach and NMB Water, Florida, Membrane Treatment System Improvements. The design included the following improvements for the reverse osmosis and nanofiltration membrane treatment systems: addition static mixers on the raw water lines, replacement of sulfuric acid and antiscalant chemical feed system components, and replacement of craddles for membrane supports.

→ Project manager for the City of Pompano Beach, Florida, Concentrate Disposal project. Alternatives for disposal of membrane concentrate were developed and compared, including introducing concentrate into a reclaimed water plant. A new concentrate disposal pipeline was designed and permitted. Construction was completed in November 2017.

→ Project engineer for sulfuric acid feed system modifications for the City of Sunrise, Florida, Sawgrass Water Treatment Plant. This project includes pump and piping modifications for feeding sulfuric acid at a reverse osmosis treatment system.

→ Project engineer for the design of a new raw water intake pipeline for the City of Rock Island, Illinois. The 2,600-foot pipeline included a river crossing below a slough of the Mississippi River and a levee wall utilizing horizontal directional drilling. The water intake structure is part of a U.S. Army Corps lock and dam. The pipeline crosses a portion of Arsenal Island, owned by the U.S. Army. The pipe route avoids an endangered mussel sanctuary and bald eagle roosting site.

→ Lead engineer for one 100-foot square primary clarifier rehabilitation at the water treatment plant operated by Aqua Illinois Inc., located in Kankakee, Illinois. Mr. Ludwigson led a team of divers to investigate the existing conditions and obtain tank dimensions. The design included filling the corners to ensure the entire floor was raked for sludge collection.

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M. Angelica Gregory, Ph.D., P.E.

Dr. Angelica Gregory is a senior engineer with 14 years of combined experience in the water and wastewater consulting industry and research. Her background includes complex hydraulic modeling for evaluation, operation, design, optimization, integration, and master planning of sewer, water, and reclaimed water network infrastructure and related assets. She is also skilled on chemical treatment processes and pilot investigations for water and wastewater plant design.

Education

BS Civil Engineering, Universidad de Los Andes, Bogota, Colombia, 2003

MS Civil and Environmental Engineering, Universidad de Los Andes, Bogota, Colombia, 2005

PhD Civil Engineering, University of Miami, Coral Gables, 2010

Licenses

Professional Engineer, Florida

Certification

Professional Affiliations

American Water Works Association

Water Environment Federation

Society of Women Engineer

Relevant Experience

→ Overall project engineer and assistant project manager for the Town of Davie Utilities Comprehensive Master Plan and Rate Study. Angelica lead efforts to plan for capital, operation, and R&R improvements for the next 25 years at all levels of the utility – from the Town's 2 water treatment plants and their 2 wastewater treatment plants, to their water distribution, their wastewater collection system, and their reclaimed water system. All components of the project proved challenging because of the many changes and regulatory limitations that the utility was subject to over the last few years. Directly relevant work that Angelica completed under this project included the analysis of the event that one of the water treatment plants were decommissioned, leaving nearly 60 percent of the service area with lower than standard water service pressures. Angelica used the Town's hydraulic model to conceptualize the conversion of the old plant's high service pump station and ground storage tanks into a booster pump station that would be remotely controlled from another facility, to restore the pressure in the system. Tank turnover to improve distribution system water age and tank level controls were simulated and provided as part of the effort. Planning-level design and costs were provided to the Town and included in their long-term CIP.

→ Project engineer for the Collier County Potable System Surge Analysis. Collier County experienced large pressure transients and waterhammers at both treatment plants and at various locations within the distribution system. Dr. Gregory provided assistance to the County to analyze pumping, storage, and transfer data and determine the root causes of these pressure transients and to develop and implement a plan of action to rectify the pressure transients including recommending operational protocols for the WTPs and remote pumping and storage stations. The InfoSurge module was used with InfoWater software to perform hydraulic simulations and select optimal solutions.

→ Project engineer for the Manatee County Fire Flow Analysis. Evaluated the current water availability throughout Manatee County vs. regulatory fire flow requirements for the different land use types throughout the service area. Determined causes of non-compliance and proposed improvement projects and/or strategies that would lead to full regulatory compliance.

→ Project engineer and assistant project manager for the wastewater, water, and reclaimed water systems hydraulic modeling component of the Boynton Beach Utilities Management Optimization Plan. Constructed the wastewater force main collection system model from partially available GIS, planned and oversaw the field, SCADA, and record data collection, introduced data to all modeled assets including 63 lift stations, determined and allocated existing and future dry and wet weather flow loading, calibrated to existing conditions, evaluated the existing forcemain system and several future scenarios to identify hydraulic daficiencies, and simulated and proposed corrective actions to optimize future operations and capital improvements cost. Innovyze software was used in this effort.

→ Project engineer for the three Manatee County Utilities, Florida, wastewater Master Plans for the Southwest, Southeast, and North service areas. Responsibilities included updating network from existing GIS and vertical asset operational information (including over 600 lift stations) from a variety of sources, performing complex data-based dry and wet weather calibrations, de-

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M. Angelica Gregory, Ph.D., P.E.

veloping population projections in accordance with expected development, and evaluating existing and future impacts under several scenarios up to build-out conditions. Simulations included project proposals to improve the collection system in the most cost-efficient manner. Results were presented in a 5-, 10-, and 20-year Capital Improvements Plan. Bentley software was used in this effort.

→ Project engineer and assistant project manager for the City of Plantation, Florida, wastewater model development. Created a hydraulic model of the City's wastewater force main system comprising 84 lift stations, planned and oversaw field data collection activities including pressure monitoring at every lift station and flow gathering at confluence and booster points, performed model calibration activities, and evaluated the existing forcemain system to identify hydraulic/energy deficiencies and potential operational improvements. Evaluated and provided recommendations for a redevelopment scenario and new developments scenario.

→ Project engineer for the Glades Region Water Master Plan (GRWMP) for Palm Beach County Water Utilities Department, Florida. The project includes updating and merging the existing Infowater skeleton model with the GIS database and with physical and operational characteristics gathered in the field or provided by the Department; to develop a robust, calibrated model that would be useful to produce a Capital Improvements Plan (CIP) through year 2035. The resulting GRWMP was incorporated in the Comprehensive Glades Region Master Plan.

→ Project engineer for Palm Beach County Water Utilities Department, Florida, 2012 Water Master Plan (WMP) Update. Carollo updated the previous WMP and an Infowater skeleton model and merged both into a planning and control tool. Demand projections and peaking factors were developed using historical SCADA data, and fed to the model along with operating parameters of high service pump stations, storage tanks, and other attributes of the network for calibration. The model was built with the capability of predicting system behavior under a number of demand conditions including average, maximum day, peak hour, and fire flow scenarios. Hydraulic constraints were identified when evaluating the network under EPA and others' recommended hydraulic design criteria. Water age, pipe vulnerability, and redundancy were also evaluated using the model. Based on modeling results and evaluation of facilities, a 20-year Capital Improvements Plan (CIP) was developed to sustain the Department's future needs. Dr. Gregory was responsible for input development, system evaluation and water quality and hydraulic analyses, CIP development, and report writing among others.

→ Project engineer for the Manatee County, Florida, Inflow and Infiltration (I&I) Study. Responsibilities included performing mass balance calculations to determine saline water intrusion concentrations to identify priority areas requiring improvement and the relative extent of corrective action required. Proposed replace and replacement projects, and estimated associated costs.

→ Project engineer for Manatee County, Florida, Valve and Force Main Condition Assessment and Asset Management Program. Development of a comprehensive program to investigate the condition and maintenance practices of the County's forcemain network (comprised of over 800 lift stations and 400 miles of force main) and associated isolation valves. The condition assessment was based on pipeline age, material, inspection, and criticality. The Forcemain and Valve Asset Management Program was developed to assist the County in preserving the functionality and reliability of its wastewater forcemain infrastructure.

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Stephen P. Glatthorn, P.E.

Steve Glatthorn joined the Carollo team in 2019. He possesses a Master's degree in Environmental Engineering with a focus on Environmental Process Engineering. With over 11 years of experience, Steve has primarily concentrated on water treatment processes.

Education

MS Environmental Engineering, University of Central Florida, 2007

BSCE Civil Engineering, University of Central Florida, 2005

Licenses

Professional Engineer, Florida

Professional Affiliations

American Water Works Association

Relevant Experience

→ Staff engineer for the City of Pompano Beach, Florida, Water Master Plan. Primarily responsible for conducting the facilities evaluation and condition assessment, regulatory evaluation, hydraulic evaluation, and benchmarking study for the City's 50-mgd water treatment plant. Included evaluation of the City's 10-mgd nanofiltration plant and the 40-mgd lime softening plant, which resulted in recommendations for future planning and capital improvement projects.

→ Staff engineer for the City of Pompano Beach, Florida, Water Supply Facilities Work Plan Update. Assisted in developing water demand projections, alternative water supplies planning, conservation and reclaimed water scenarios, long-term water treatment options for the City to implement over a 10-year planning period.

→ Project manager for the Orange County Utilities, Florida, Eastern Regional Water Supply Facility Capital Improvement Program. The project includes development of near- and long-term plans for the County's 30-year Capital Improvement Program, future demand projections, and recommendations for optimizing treatment and enhancing reliability.

→ Water resources manager for the City of Miramar, Florida. Responsible for overseeing day-to-day operations at two water treatment plants and one wastewater treatment plant for over 2 years, with a focus on managing operations budgets, implementing treatment and facility improvements, evaluating operation staff and implementing protocols, preparing reports, permits, and agenda items, and coordinating and responding to emergency situations.

→ Project engineer for the Orange County Utilities, Florida, Eastern Regional Water Supply Facility Improvements. Included preliminary and final design of the phased expansion of an existing groundwater treatment facility to a capacity of 62.5-mgd. Design tasks included sizing for new forced draft aerators and air quality control scrubbers, new transfer pumps and clearwell, expansion of high service pumping system, redesign of carbon dioxide feed system, expansion of sodium hypochlorite generation system and new fluoride and caustic facilities.

→ Project engineer for the City of Clearwater, Florida, Groundwater Replenishment Feasibility and Pilot Study. Included an initial evaluation of the use of highly purified reclaimed water as a source for aquifer recharge. Work on the project included preliminary selection and sizing of treatment process incorporating membrane filtration, reverse osmosis, advanced oxidation, oxygen removal, and stabilization. Also developed conceptual capital and O&M costs and assisted in setup and design of a 12-month pilot program.

→ Project engineer for the City of Punta Gorda, Florida, Water Treatment Plant Reverse Osmosis Addition. Included preliminary design of a brackish reverse osmosis treatment facility to provide low TDS permeate for blending with high TDS treated surface water, and conceptual design for the raw water transmission, pretreatment systems, membrane process sizing, post treatment and finished water blending modeling scenarios.

→ Project engineer for the Orange County Utilities, Florida, Western Regional Water Supply Facility Improvements. Included the expansion of an existing groundwater treatment facility. Primary responsibilities included hydraulic calculations for sizing new supply wells and piping, replacement of existing chlorine gas disinfection system with new bulk sodium hypochlorite chemical storage and feed facilities, modifications to fluoride system, and design of new on-site lift stations.

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→ Project engineer for the City of Port St. Lucie, Florida, Seawater Desalination Feasibility Study. Included the evaluation of seawater and other potential high salinity alternative water supply sources that could meet the City's long-term future drinking water supply needs. Work on the project included evaluation of potential source water intake and treatment plant sites, transmission corridors, concentrate disposal alternatives, and pre, primary, and post treatment technologies. Conceptual process designs were developed for small capacity (10-mgd) and large capacity (50-mgd) desalination treatment facilities, including conceptual capital and O&M costs associated with each alternative

→ Project engineer for the Miami-Dade County Water and Sewer Authority, Florida, Process Optimization Study. The project included laboratory and field testing to optimize 216-mgd lime softening plant, optimization of lime and coagulant doses, slaking evaluation of different lime sources, and additional field optimization studies for particle settling, hydraulic loading, and recarbonation efficiency. DBP formation studies were also performed to investigate current disinfection practices and provide recommendations. The studies were used to develop several scenarios to refurbish and upgrade the existing facility.

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Vincent S. Hart, P.E., ENV SP, LEED

Vincent Hart, an executive vice president with Carollo, has 25 years of experience in planning, design, and expansion of water supply, water treatment, and water distribution facilities. He has been involved with multiple bench and pilot studies involving design and expansion of water treatment facilities, including ultraviolet (UV) disinfection, and has written various publications and given presentations on the subject. Mr. Hart has served as water supply engineer for design and operation of pilot plant facilities and water treatment plant expansion projects. His areas of expertise include pilot plant design and operation, water treatment plant design and operation, membrane filtration facilities, and UV disinfection for drinking water.

Education

MS Environmental Engineering, Virginia Polytechnic Institute, and State University, 1994

BS Environmental Engineering, Syracuse University, New York, 1992

Licenses

Professional Engineer, Colorado, Missouri, Minnesota, Kansas, New Jersey, North Carolina, Tennessee

Certifications

LEED Accredited Professional, Green Building Certification Institute, 04/18/2009

Envision Sustainability Professional, Institute for Sustainable Infrastructure, 12/2/18

Professional Affiliations

American Water Works Association

Water Environment Federation

American Society of Civil Engineers

National Association of Corrosion Engineers

Relevant Experience

→ Project manager for the South Adams County Water and Sanitation District, Colorado, Pellet Softening Study. This project consisted of a month-long pilot skid operation to evaluate the feasibility of pellet softening as a viable hardness removal strategy at the Klein Water Treatment Facility. During this study, various testing was conducted to determine the impact of adjusting pH, reactor loading rate, source water wells, and seed bed characteristics to determine the optimal operating parameters required to achieve the District's hardness removal goals. The results of this pilot study were used to develop alternative treatment schemes, site layouts, and cost estimates for various full-scale pellet softening systems which would potentially be implemented at the site.

→ Process lead for the Miami-Dade Water and Sewer Department, Florida, Design of the Hialeah and Preston (225-mgd combined) Water Treatment Plants. This project identified process modifications and improvements to the conventional lime softening water treatment plants to address a reclassification of one of the water sources as ground water under the direct influence of surface water.

→ Project manager for the City of Olathe, Kansas, Water Treatment Plant No. 2 Expansion Study. The project involved a report that evaluated 11 different expansion options for the City's existing conventional softening plant (expansion from 17 to 30-mgd). The study allowed for expanding the existing softening basin capacity from 17-mgd to 38.25-mgd without building any new treatment basins. After using a detailed decision-making tool with stakeholders, the decision was made to expand the facility using membrane treatment. The final process treatment train resulted in a 33% reduction in lime use, 60% reduction in carbon dioxide use, and a significant reduction in residuals production.

→ Project manager for the City of Manhattan, Kansas, Water Treatment Plant and Wellfield Expansion Study. Tasks included defining water supply, treatment, and transmission needs for the next 40 years. Carollo developed the population and water demand projections for the City's future service area. The report evaluated expansion alternates for the existing conventional softening facility. It was determined that, by operating the new wells and constructing wells in the appropriate location, the raw water hardness could be significantly reduced. This, in combination with reconfiguring the basins, uprating the filters, replacing the lime system, reconfiguring the transfer pump station operation, and optimizing the fluoride feed dose, is estimated to save the City approximately $5 million in operations and maintenance costs (net present value) and $4.5 million in capital costs (net present X value).

→ Project manager for the South Adams County Water and Sanitation District, Colorado, Pellet Softening Disinfection Improvements Project. The project consisted of the design of a full-scale pellet softening system at the Klein WTF for the removal of calcium hardness. This included a series a pellet reactors, a stabilization basin of pH adjustment, anthracite over sand filters for turbidity removal, a new chemical storage building, and all of the associated facilities required to implement the system. Also in-

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cluded in this project is the design of a temporary sodium hypochlorite feed system which allowed the District to continue operating the facility during construction after the existing chlorine system was demolished.

→ Pretreatment manager and pretreatment startup manager for the City of Austin, Texas, Handcox WTP (WTP No. 4). Initial capacity of the plant is 50-mgd, with facilities sized and configured for an ultimate capacity of 30-mgd. Delivered as a construction-management-at-risk (CMAR) project, the guaranteed maximum price was $359 million. Mr. Hart assisted the City in making decisions on the softening process in order to achieve a stable non-corrosive finished water quality.

→ Project manager for the City of Aurora, Colorado, 80-mgd Griswold Water Purification Facility (WPF) Solids Study and Predesign. The existing washwater recovery lagoons at the Griswold WPF are near capacity and have challenges adequately drying solids before disposal. Additionally, the existing backwash supply, filter-to-waste, and backwash recycle systems limit the plant's treatment capacity. This study evaluated filter backwash and solids handling alternatives to address these issues, including rehabilitation of the existing lagoons, new passive lagoons and sand drying bed alternatives, and mechanical dewatering alternatives.

→ Project manager for the Willmar Municipal Utilities, Minnesota, Desktop Ion Exchange Evaluation for Ammonia Removal. Led the evaluation of different technologies for the Utilities' two existing water treatment plants. The evaluation examined the use of vessel ion exchange resin downstream of softening for the removal of ammonia. The project successfully piloted biological filtration for ammonia and manganese removal at both facilities.

→ Project manager for the City of Olathe, Kansas, Water Treatment Plant 2 Expansion (2006). This design-build project included an expansion from 17-mgd to 30-mgd using microfiltration membranes downstream of a softening process. The project involved converting a two-stage softening process to a single-stage softening process in combination with a conventional coagulation process. This change in approach allowed basin capacity to increase from 17-mgd to 38.25-mgd without building any new basins. The project also included designing a membrane backwash recycle system and a fourth residuals dewatering lagoon (2 acres) and decant pump station. The project included a membrane feed pump station, 13-mgd of membranes (with space for 52-mgd), 15-mgd high-service pump station, baffled clearwell, and new chemical feed systems. The chemical feed systems included soda ash, batch lime slaking process, sodium hypochlorite, polyphosphate, ferric sulfate, and chlorine dioxide. The high-service pump station consisted of four variable speed 5-mgd horizontal split-case pumps. An algorithm was developed to control the high service pumps and resulted in significant power savings (10 percent).

The preliminary design report evaluated 11 different expansion options for Olathe's existing conventional softening plant. After a detailed decision-making tool was utilized with stakeholders, a decision was made to expand the facility using membrane treatment. The project also included design of 52.5-mgd of pumping capacity with piping and electrical setup for the installation of 88-mgd of pumping capacity. This design included six horizontal split-case centrifugal pumps with five variable frequency drives. The project also included an overall energy efficiency program that utilized the current discharge pressure of the distribution system and overall plant flowrate to optimize the speed and number of pumps that were operating. During the first month this system was in operation, the power use per million gallons of water treated dropped 10 percent. The energy efficiency system also automatically controls all ten of the high-service pumps to provide the desired high-service pumping capacity and maintains the operation of all high-service pumps on their allowable operating curve, thereby minimizing damage to the pump due to improper operation.

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Roderick D. Reardon, P.E., BCEE

Roderick Reardon is an environmental engineer with 41 years of experience in the study, design, and operation of municipal wastewater facilities. Mr. Reardon has particular expertise in advanced wastewater treatment processes, including membrane technologies, for the removal of nutrients and for producing reclaimed water fit for various types of reuse.

As Carollo's National Wastewater Technology Leader, Mr. Reardon is responsible for a wastewater technology team that manages acquisition, compilation, transfer, and consistent application of wastewater processes and technology throughout the company. For specific projects, he performs as project manager/engineer or as process specialist.

During his career, Mr. Reardon has worked as a project engineer, project manager, and wastewater process specialist on a wide variety of environmental engineering projects, including facility plans, water and wastewater transmission systems, and numerous wastewater treatment plants ranging in size from 0.1 to over 600-mgd. He managed an innovative capacity study at an advanced wastewater treatment facility that won the Grand Prize in Research in the American Academy of Environmental Engineering Excellence in Environmental Engineering competition. He also directed the process selection and final design for the first nitrogen removal facility on Puget Sound.

Mr. Reardon is active in the Water Environment Federation (WEF) and was the Task 1 Volume Lead for the Fifth Edition of Manual of Practice No. 8 – Design of Municipal Wastewater Treatment Plants (MOP 8). Previously, he co-authored the chapter on nutrient removal in the Third and Fourth Editions of MOP 8 and a chapter on the costs of nutrient control in a WEF special publication titled Biological and Chemical Systems for Nutrient Removal. He wrote chapters on wet weather clarification and tertiary clarification for the second edition of the WEF Manual of Practice No. FD-8 Clarifier Design and a chapter in Membrane Systems for Wastewater Treatment. He also collaborated on the facility design chapter in WEF MOP No. 36, Membrane Bioreactors.

Mr. Reardon has been a wastewater specialist on over 30 value engineering (VE) studies. Many of these studies have contributed to significant savings on planned improvements to a number of very large, complex treatment facilities.

Education

MS Civil and Sanitary Engineering, Lehigh University, 1977

BS Chemical Engineering, Lehigh University, 1973

Licenses

Professional Engineer, Florida, Washington, Tennessee, Alabama, Pennsylvania, Mississippi

Professional Affiliations

American Academy of Environmental Engineers (Board Certified – Water Supply and Wastewater)

American Chemical Society

American Membrane Technology Association

American Water Works Association

Florida Water Environment Association,

International Water Association

Water Environment Federation

Relevant Experience

→ Process specialist for the New Darsait Sewage Treatment Plant, Darsait Oman, Design-Build-Operate (DBO) Tender. This DBO competition required a detailed technical proposal with preliminary drawings for a new 50 MLD membrane bioreactor facility at Darsait to produce reclaimed water for local irrigation with discharge of peak wet weather flows to the ocean. Assisted with selection of the process configuration, process sizing, process modeling, performance evaluations, and aeration system layout.

→ Process advisor and reviewer for the Babcock Ranch Wastewater Treatment Facilities, Florida. Babcock Ranch is a planned residential community being developed on the 17,000-acre Babcock Ranch property near Ft. Myers that will ultimately have a population of about 50,000. The wastewater treatment facilities will meet limits in the reclaimed water for both nitrogen and phosphorus. The project is being constructed in two phases using a design/build approach.

→ Task leader for the Orange County Utilities, Florida, Water, and Wastewater Facilities Program Management. Continuing services for program management are

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Roderick D. Reardon, P.E., BCEE

being provided under this contract, including a variety of planning, engineering, and management services necessary to implement the County's Capital Improvement Program for water, wastewater, and reclaimed water facility improvements and various other projects necessary for facility management and utility operation, compliance, and optimization.

→ Senior process engineer for an update to the Facility Plan for the Southwest Water Reclamation Facility (SWWRF), Orange County Utilities, Florida. Provided direction, advice, and review for a re-evaluation of the selection of the best treatment technologies to meet current and possible future water quality standards. The SWWRF will be a new 5.0-mgd plant providing advanced wastewater treatment and reclaimed water supply for the County's Southwest Service Area.

→ Technical advisor/project engineer for the Miami-Dade Water and Sewer Department (MDWASD), Florida, Aquifer Recharge Pilot Plant. Under an Interim Consumptive Use Agreement with the South Florida Water Management District, MDWASD agreed to conduct a pilot study to investigate recharging the Biscayne Aquifer with treated reuse. Carollo Engineers designed and prepared bid documents for the procurement and construction of the pilot-plant associated with this work. Responsible for sizing the biological treatment and low-pressure membranes and providing technical review and advice for the RO membrane system design.

→ Process engineer for the Orange County Sanitation District (OCSD), California, Primary Treatment Optimization Study (P1-116) at the OCSD Plant No. 1. Assisted in a modeling study that evaluated the effect that the performance of chemically enhanced primary treatment had on the cost of operating downstream processes.

→ Project director for the Charlotte-Mecklenburg Utilities, North Carolina, Mallard Creek Water Reclamation Facility Final Clarifier and Related Improvements Study and Design. The project included adding a final clarifier, mixed liquor recycle pumps, and flow distribution/hydraulic improvements.

→ Process specialist for additional services for the City of Tallahassee, Florida, Lake Bradford Road Water Reclamation Facility Improvements. Provided advice, process engineering, and modeling to identify alternative process configurations capable of providing economical nitrogen removal for an interim period at the existing wastewater plant.

→ Project manager for the final design of the City of Tallahassee, Florida, Lake Bradford Road Water Reclamation Facility Improvements. To protect the water quality in Wakulla Springs, a Settlement Agreement between the City, the State of Florida, and other parties required the City to upgrade its wastewater treatment to meet water quality limits of 3.0 mg/L total nitrogen and 2.5 mg/L total phosphorus. Managed final design to upgrade the existing 4.5-mgd Lake Bradford Road secondary facility to meet these stringent limits using membrane bioreactor technology combined with a four-stage nitrogen removal process.

→ Project engineer for the Preliminary Design Report for the City of Tallahassee, Florida, Lake Bradford Road Water Reclamation Facility Improvements. Assisted in the process design for proposed upgrades to the existing wastewater treatment facilities and preparation of the preliminary design report used by the City to obtain a wastewater permit from the State of Florida.

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Chris T. Reinbold, P.E.

Chris Reinbold, a vice president with Carollo, has 17 years of experience that includes study, design, permitting, and construction administration services for treatment plants, pumping stations, pipelines, and chemical systems. His continual focus for clients is to seek additional value, savings, or other operational enhancements on each project.

Education

Master of Civil Engineering, North Carolina State University, 2008

BS Civil Engineering, University of North Carolina at Charlotte, 2003

Licenses

Professional Engineer, Florida, North Carolina

Professional Affiliations

American Water Works Association

Water

→ Project manager for the City of Riviera Beach Utility District (CRBUD), Florida, Water Treatment Plant Evaluation. This project includes the evaluation of the process systems at the CRBUD Water Treatment Plant to determine the expected performance of each process system. The evaluation will identify expected performance of each process system in terms of intended function and capacity along with a review of meeting established permitted regulatory criteria. This effort included review of existing documents, performing process calculations, interviews with operations staff, and review of application permits and regulatory criteria. Also included was the evaluation of the existing treatment system hydraulics. Carollo will also provide training seminars to CRBUD staff based upon topics identified during the above evaluation.

→ Project manager for the City of Sunrise, Florida, Sawgrass Water Treatment Plant membrane replacement, acid modifications, ion exchange (IX), and other improvements. This project includes two bid packages. The first is to replace the nanofiltration membrane elements for the existing 24-mgd treatment plant and demolish and replace the sulfuric acid pumps. The second is to install an oxidation, pre-filtration, and IX system to treat surficial aquifer water for iron, control color, and reduce organics. This treatment train is separate and parallel to the existing membrane filtration train. Following degasification of the membrane permeate, the IX treated water will be blended with it to optimize finished water hardness and alkalinity. The City will experience cost savings (through power and chemical reduction), reduced distribution system maintenance, increased water use, and improved overall finished water quality.

→ Project manager for the City of Sunrise, Florida, Southwest Water Treatment Plant Ion Exchange (IX) & Improvements. This project includes addition of a 2-mgd fixed bed vessel IX system for color control and organics reduction at an existing lime softening plant. Other improvements include the replacement of well 2, replacement of the diesel engine backup generator and associated fuel storage tank, salt storage for IX regeneration, waste equalization, demolition of the existing lime silo for construction of a new larger silo to install two Owner furnished slakers, and associated electrical and I&C features. The addition of the IX system will allow the City to improve finished water quality as well as meet regulatory requirements associated with disinfection byproducts while implementing a new disinfection system to meet the Groundwater Rule.

→ Project manager for the City of Sunrise, Florida Springtree Water Treatment Plant Phase II Improvements & Rehabilitation. This project included renewal and upgrades to the existing four (4) 6-mgd each solids contact clarifiers, additional of raw water aerators, replacement of the south lime silo, concrete structure rehabilitation for the filters and flume, demolition of the existing east filters and transfer pump, addition of a new transfer pump station rated for 12-mgd, addition of a water stabilization (CO_2) system, extension of washwater return piping to connect to the two west softeners, and replacement of the existing rotary drum vacuum filter belts and appurtenances for lime sludge dewatering. This project was designed and is being constructed in two separate bid packages.

→ Project manager during study/design and construction manager during construction for the Palm Beach County Water Utilities Department, Florida, Water Treatment Plant No. 2 Filter Replacement project. This project includes a new filter structure with dual media filters rated for an initial capacity

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of 16.4-mgd and designed to be high rated to an ultimate capacity of 25-mgd. The filter structure also includes a clearwell, transfer and backwash pumps, air scour blowers, electrical room, and chemical feed connections. The new filters replace existing steel vessel filters at each lime softening train that are to be demolished along with a 1.0 million gallon storage tank. Other items include site grading, drainage, paving, and yard piping to support the new facilities with demolition of the old.

→ Design manager for the City of Sunrise, Florida, Sawgrass 3-mgd Reverse Osmosis Water Treatment Plant. This project included the preparation of a procurement bid package and the general construction bid package, including 3-mgd of reverse osmosis treatment at the existing 18-mgd Sawgrass Water Treatment Plant. Included in the reverse osmosis system design were cartridge filters, two-stage reverse osmosis treatment, degasification, air quality control scrubbers, clean-in-place system, and chemical systems. Also included in this project was the uprating of the existing nanofiltration treatment system from 18 to 24-mgd along with other renewal and improvement items.

→ Design manager for the City of Sunrise, Florida, Springtree Water Treatment Plant Sodium Hypochlorite Tank Replacement, Reverse Osmosis Water Treatment Plant, and Controls Building and High Service Pump "A." The project was executed as three separate bid packages. The first was to replace four 15,000-gallon each sodium hypochlorite tanks on an accelerated schedule. The second was to prepare a procurement bid package and then general construction bid package including the design of 3-mgd of reverse osmosis treatment, with 1.5-mgd to be procured and installed in the first phase, at the existing 24-mgd Springtree Water Treatment Plant. The reverse osmosis design included conversion of an ASR well to a Floridan aquifer production well, sand strainers, cartridge filters, two-stage reverse osmosis treatment, degasification, air quality control scrubbers, clean-in-place system, and chemical systems. The third bid package included the addition of a new plant controls building, new 12-mgd high service pumping station, and miscellaneous renewal and improvements to the existing softeners.

→ Project manager for the Palm Beach County Water Utilities Department, Florida, System 3 Water Treatment Plant Permeate Pipeline Replacement. Prior to designing the new piping, a study was conducted to investigate repair or replacement options for a deteriorating 42-inch diameter ductile iron permeate pipeline. This project included replacement of the permeate pipeline for a 30-mgd nanofiltration water treatment plant with a new HDPE pipeline including new stainless steel aboveground and vault piping, new flow meter, and repair and reconstruction of existing improvements affected by the piping installation.

→ Project manager for the Palm Beach County Water Utilities Department, Florida, System 8 Water Treatment Plant Train 3 Softener Bypass and Ion-Exchange Pilot Study. An ion-exchange pilot study was conducted to evaluate the potential to stabilize the softener effluent by bypassing a portion of raw water around the softener and into the influent stream of the 10-mgdion-exchange system. Design was completed based upon the recommendations of the study, which included the addition of flow control valve, flow meter, and bypass pipeline.

→ Staff engineer for Ak-Chin Indian Community, Arizona, Water Reclamation Facility Solids Handling project. Overall project includes 0.6-mgd water reclamation facility including: influent pumping station for 1.8-mgd headworks, potential future grit removal process, potential future equalization basin and splitter structure, biological process basins, membrane bioreactor, reclaimed water storage reservoir and pump station, solids handling facility, electrical building, potential future sludge digestion facility, and reclaimed water recharge basins. Responsibilities included designing solids handling facilities including 2-meter, 3-belt extended dewatering belt filter presses, a polymer storage and feed system, solids pumping, solids storage container layout, and odor control system layout.

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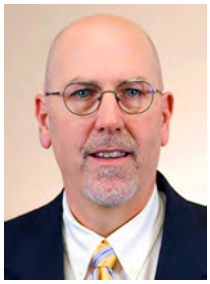

Brian Graham, P.E.

Brian Graham is an environmental engineer and operator with 33 years of experience encompassing design and operation of advanced water and wastewater treatment systems, biological nutrient removal, reverse osmosis (RO) water treatment, biosolids management, master planning, wastewater process modeling and computer simulation. He has been involved in the design, startup, and operation of numerous advanced wastewater, water, and RO treatment projects throughout the United States. For Suez (previously known as United Water, Inc.) he was the Engineering Manager and Process Engineer for the 42-mgd West Basin Water Recycling Plant in El Segundo, California. Mr. Graham also served as Suez' Senior Director of Operations for the West Division and as Director of Technical Assistance for Suez nationwide assisting with operation, engineering, process troubleshooting, and facility startup activities.

Education

BSE Environmental Engineering and Science, University of Florida, 1986

Licenses

Environmental Engineer, Arizona

Civil Engineer, California

Professional Engineer, Oregon, Florida, Texas

Certifications

CA Grade III WWTP Operator

Professional Affiliations

Water Environment Federation

American Water Works Association

Water Treatment

→ Process engineer for the City of Leesburg, Florida, Turnpike SBR Expansion from 3.0 to 4.5 mgd (AADF). Carollo, as a subconsultant to another firm, was selected to evaluate, design, and provide biding services for the expansion. The City later decided to include the Carollo team as part of a CMAR approach to build the expansion.

→ Troubleshooting assistance for the City of Delray Beach, Florida, 24-mgd South Central Regional Wastewater Treatment Plant. As part of the aeration replacement project, the plant needed to take a quarter of the aeration basins offline; however, the plant was experiencing a major filamentous bulking event. Mr. Graham quickly developed an alternative process control strategy to reduce the impact of the bulking that allowed the plant to take down the required aeration basins for the aeration replacement project.

→ Startup assistance for the San Luis Obispo County, California, 2.0-mgd Los Osos Wastewater Treatment Plant. Following construction and contractor turnover, Mr. Graham provided direction, process performance targets and operational strategy to improve the plant's performance and achieve compliance for effluent total nitrogen.

→ Senior director of operations for Suez – West Division. Oversaw a diverse portfolio of projects in potable water treatment, wastewater treatment, advanced wastewater treatment for reclamation/reuse, and an industrial pretreatment and source control program. Had six (6) direct reports and a total project staff of 85 operators, engineers, chemists, lab technicians, source control specialists, and administrative support staff. In addition to client satisfaction responsibilities, reported to the segment president and was responsible for the overall environmental compliance, worker health & safety compliance and financial profitability of the United Water West Division which has an annual budget in excess of $16 million.

→ Engineering manager and process engineer for the West Basin Water Management District, California, Edward C. Little Water Reclamation Facility (and satellite facilities). Oversaw daily production and performance of the facility that produces recycled water meeting California's Title 22 standards as well as producing boiler feed (low pressure and high-pressure feed) and cooling water for several refineries in the Los Angeles area. Directed a staff of engineers and operators with ongoing filter and membrane pilot studies, chemical usage evaluations and filtration improvements; microfiltration and reverse osmosis performance and the evaluation of the performance of the Biofor™ biological aerated filtration nitrification processes located at the Mobil and Chevron refineries.

→ Technical assistance, operations support, and due diligence for the Corrosive Water Project for Suez in Gardner, Massachusetts. Suez operates the City's water and wastewater systems. The City was faced with the unexpected failure of a number of homeowner hot water heating coils. Mr.

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Brian Graham, P.E.

Graham evaluated the potable water chemistry and determined that while it was stable in the household plumbing, it became corrosive in the hot water coils (due to the elevated temperature and crevices in the coils). He developed a corrosion control plan using zinc-orthophosphate for the potable water system and also evaluated the impact on the wastewater treatment process due to the increase in phosphorus in the wastewater and directed the operations staff on how to manage this increased phosphorus load.

→ Technical assistance, operations support, and due diligence for the project start up and transition from municipal operation to contract operation, Nassau County, New York. Suez assumed the responsibility for operating and maintaining the Nassau County wastewater collection and treatment system. This system includes two large wastewater treatment plants (approximately 50 mgd each), the associated powerhouses, heating and cooling systems (boilers and chillers) and anaerobic digesters at each facility. Coordinated the development of over 500 standard operating procedures (SOP), the Interim Operating Plan, Operations Management Plan, Energy and Water Conservation Plan, Flow Monitoring Plan, Odor Control Plan, Residual Monitoring Plan, and Sampling Plan. These Plans and Procedures were contractual obligations and are necessary for using in operating the wastewater facilities. Developed and delivered these documents ahead of schedule and continued to assist in transitioning the project by training operators and identifying operational problems that needed correction for the plants to maintain environmental compliance.

→ Technical specialist for the White River Environmental Partnership Optimization Project for United Water Indiana. Provided technical assistance related to process control and optimization of the 60-mgd Wastewater Treatment Plant. This facility is required to meet very low nitrogen and phosphorus limits. Mr. Graham developed a computer program for process control combining data storage; MCRT calculations and solids flux analysis and evaluated and improved the ferrous sulfate chemical feed system and the gas production performance of the anaerobic digesters.

→ Wastewater process engineer for the City of Laredo, Texas, Zacate Creek Wastewater Treatment Plant (WWTP). Assisted the operations staff in improving the performance of the 14-mgd Zacate Creek WWTP. This plant consists of two separate trains: a trickling filter train and a contact stabilization train. The WWTP was scheduled for major renovation and rehabilitation in the fall of 2003 and was experiencing operational difficulty due to aging equipment and mechanical failures. Also, the contact stabilization train has a historical problem with Nocardia foaming that occurs during cold weather periods. Also assisted with process modifications to improve performance to eliminate the foam and maximize treatment performance.

→ Due diligence team member for the Oklahoma City United Water team, Oklahoma. Charged with the evaluation of the wastewater treatment process evaluation of the City's wastewater treatment plants (WWTPs). In this role he evaluated overall WWTP performance, sludge production, energy, and chemical usage of the WWTPs as part of the United Water bid submittal.

→ Technical services manager for the Springfield Water and Sewer Commission, Massachusetts, Springfield Regional Waste Water Treatment Facility (SRWTF). Using GPS-X, modeled the SRWTF under its current configuration and under a contact stabilization process to evaluate the differences on the clarifier loading and sludge production between the existing operation and the contact stabilization operation.

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Gamboa
Engineers Innovating with Energy and Automation

Mario A. Gamboa, P.E.
Lead Electrical Engineer
Office Location: Southwest Ranches, FL

Mr. Gamboa will be the Lead Electrical and Controls Engineer, responsible for the Master Plan, Design, and related interconnections with SCADA Systems for the plant electrical upgrades, in accordance with the City of Pompano Beach design criteria and standards, including power distribution systems from the FPL power source and medium voltage switchgear, through underground duct-banks, transformer rooms, new main electrical rooms, layout of new 480 arc resistant switchgear, motor control centers, power flow analysis, control schematics and ancillary support system such as LED lighting, grounding and lightning protection, conduit and wiring schedules, During the construction phase, Mr. Gamboa will act as the Lead Electrical Engineer, for review of submittals, response to RFIs, evaluate proposal for any changes, address construction constraints, and provide input for project schedule update.

Mr. Gamboa professional experience spans 39 years of Electrical Engineering experience in the water and wastewater field working for and with Carollo Engineers in projects and municipalities throughout the United States, Florida, including City of Pompano Beach Utilities Department

Relevant Project Experience Related to RFQ – E04-20

- ✓ **39 years in electrical engineering and related value engineering; engineering management, construction management of numerous municipal and industrial projects**
- ✓ **Substantial knowledge of the City of Pompano Beach Water Treatment Plant Power Distribution systems, including the existing 5 KV switchgear, recent upgrades to the 480 volts switchboards, motor control centers and familiar with older equipment that it is reaching the end of its useful life.**
- ✓ **Expertise with means and methods of construction for electrical and automation systems.**
- ✓ **Significant Water Treatment Plant project experience**
- ✓ **Substantial Experience in electrical design and automation of Lime Softening and RO Membrane systems**

Relevant Responsibilities	Relevant Expertise
♦ Electrical Engineering Management	♦ Compliance with Pertinent Codes and Standards
♦ Basis of Electrical Design Criteria	♦ Project Phasing & Scheduling
♦ Collaborate and Coordinate with Water Treatment Process Design and Construction Team	♦ Engineering Management of Municipal, Industrial and Commercial Projects
♦ Design of Electric Power Distribution Systems	♦ Lime Softening Systems
♦ Synchronizing of Standby Power Generator Auxiliary Support Systems	♦ Membrane Filtering System
♦ Quality Control of Electrical and Automation Design	♦ Pump Stations
♦ Testing of Electrical and SCADA systems	♦ Power Studies and Load Flows
♦ Electrical and SCADA System Start-Up & Commissioning	♦ Electrical & Instrumentation Opinion of Cost
	♦ Value Engineering of Electrical and Control Systems

- ✓ Lead electrical engineer for the City of Pompano Beach Water Treatment Lime Softening Plant, Electrical Master Plan and Urgent Improvements Phase I, II and III projects. These projects included separate phases for the design and construction to replace 5 kV power distribution Motor Control Center, 480 volts power distribution switchgear, 5 kV /480 volts transformers, replace 480 volts variable frequency drives.
- ✓ Quality control electrical engineer to assist the City of Pompano Beach Water Utilities Department with review of separate design for 600 HP pump's speed controls with 5 kV VFDs and addition of programmable logic controllers.
- ✓ Quality control electrical engineer to assist the City of Pompano Beach Water Utilities Department, with review of design documents for electrical upgrades to the west water production wellfield. The projects included 13 kV-480 volts pad mounted transformers, 13 kV cable Splitter cabinets and underground 13 kV cables.

- ✓ Lead electrical engineer for the Master Plan for Upgrades to 5 KV and 480 V Electrical System, Southwest Water Reclamation Facility, Manatee County, Bradenton, Florida. Performed inspection, condition assessment of 5 KV power distribution switchgear; 5 kV switchgear to synchronize two 2 MW generators, numerous 5 kV/480 V substation transformers, 480 V motor control centers, lighting panelboards, provided options to reduce quantity of electrical equipment, expansion of existing electrical building for installation of new equipment while maintaining the plant in continuous operation and opinion of construction cost.

- ✓ Lead electrical engineer for the design of CD 2.27 - two new 90 tons per day Vacuum Pressure Swing Adsorption (VPSA) oxygen production system, CDWWTP, Miami Dade WASD, Miami, Florida. Design includes 13 KV/5 KV substation transformers, 13 KV/480 V substation transformers, 5 KV motor starters, arc flash resistant switchgear, motor control centers, instrumentation for VPSA process control, additional DO instruments for oxygen reactors, VFDs for oxygen booster pressure blowers and interconnection with the plant SCADA system.

- ✓ Lead electrical engineer for the Southwest Water Reclamation Facility Electrical Power Distribution Improvements, City of St. Petersburg, Florida. Project included design of 12 kV switchgear, 2 - 2,000 kW -5 kV generators for standby power, 12 kV- 480 volts substation transformers, and underground duct-banks and electrical manholes.

- ✓ Lead electrical engineer for Northwood Water Treatment Plant, Electrical Power Distribution Assessment, City of North Miami Beach, Florida. Project included assessment of FPL redundant 13 KV electric services and their interconnections with existing 480 volts power distribution switchgear to assure power reliability. Gamboa Engineers coordinated with FPL the required modifications to existing 13 kV pad mounted switches.

- ✓ Lead electrical engineer for the Central County Water Reclamation Facility Phase 2 Expansion and Main Lift Station Upgrade, Sarasota County Utilities Department, Florida. Project included design of an upgrade to the 480 volts power distribution and SCADA system with additional FP&L utility, transformers, a 480 volts-4000 A switchgear with provisions to synchronize two 1200 KW generators, motor control centers, underground duct-banks. pumps with variable frequency (speed) controllers, and new programmable controllers.

- ✓ Lead Electrical engineer for the South-Central Regional Water Reclamation Facility, Blowers and Efficiency Upgrades Project, Delray Beach, Florida. Design included new 400 hp aeration blowers and its interconnection to 5 KV motor control centers, additional 480 volts motor starters in motor control centers, new instrumentation for monitoring and control of aeration process system, new PLCs and its interconnection with the plant SCADA system.

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

- ✓ QA/QC for the Manatee County, Florida, Southeast Regional Water Reclamation Facility and North Regional Water Reclamation Facility Electrical Master Plans. The project guided the development of electrical projects targeted to deal with aging infrastructure and population increase.

- ✓ Electrical engineer for Odessa and US 41 Booster Pumping Stations – Pressure Modifications Projects, Tampa Bay Water. Project includes Analysis of utility power, switchboard, 250 HP VFDs, 75 HP VFDs and standby power generator, to comply with NFPA-72E and electrical system modifications.

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

Robert S. Cushing, Ph.D., P.E., BCEE

Dr. Robert Cushing is senior vice president with Carollo Engineers. He has 30 years of experience in applied environmental science and engineering. Throughout his career, he has coupled fundamental concepts with sound engineering practices to provide creative, innovative, and enduring solutions to challenges faced by water and wastewater utilities. He has been responsible for numerous successful treatment facility planning and design projects, as well as studies and programs for improving distribution system water quality.

Dr. Cushing has practiced nationally, providing service to a broad cross-section of the industry, from some of the largest and most visible utilities (e.g., New York City and Washington, D.C.) to very small applications with important and unique issues (e.g. Ouray National Fish Hatchery, Utah). He has also been responsible for introducing and applying advanced technologies, most notably UV disinfection, biological treatment, ion exchange, and membrane filtration for potable water treatment.

Education

PhD Civil Engineering, University of Texas, Austin, 1993

MS Civil Engineering, University of Texas, Austin, 1990

BS Petroleum Engineering, University of Texas, Austin, 1984

Licenses

Professional Engineer, Florida, Illinois, North Carolina, South Carolina, Virginia

Professional Affiliations

American Academy of Environmental Engineers, Board Certified Environmental Engineer

American Water Works Association, (AWWA) Florida Section AWWA

- Founding Chair Region 10

Founding Director International Ultraviolet Association

Water Environment Federation

Reviewer for: ASCE Journal of Environmental Engineering
Environmental Science and Technology
Journal of the American Waterworks Association
Water Research

Relevant Experience

→ Principal-in-charge for Tampa Bay Water's, Florida, hydrogen sulfide treatment improvements at the Lithia Water Treatment Plant. Tampa Bay Water is tasked with developing, storing, and supplying water to Hillsborough, Pasco, and Pinellas counties and the cities of New Port Richey, St. Petersburg, and Tampa in a manner that reduces environmental effects of excessive or improper withdrawals. The South Central Hillsborough Regional Wellfield is owned by Tampa Bay Water, and groundwater from this facility is treated at the Hillsborough County Lithia Water Treatment Plant. The finished water from the Lithia WTP currently meets hydrogen sulfide removal requirements as specified in their Master Water Supply Contract. However, Tampa Bay Water will replace the current hydrogen sulfide removal facility with a new, more reliable process, and own and operate the new facility. This new hydrogen sulfide removal facility will rely on an ozonation process, and the delivery of this project will use an Engineer-Procure-Construction Management (EPCM) approach.

→ Principal-in-charge for the preliminary expansion design for the City of Venice Gardens Water Treatment Facility in Sarasota County, Florida. The preliminary engineering report was generated to obtain the construction permit prior to detailed design. The expansion of the facility includes upgrades and expansion of five existing membrane trains, including conversion from single stage to two stage arrays and the addition of interstage boost energy recovery devices for flux balancing and energy savings. New post treatment facilities include a new degasifier and chemical scrubber for hydrogen sulfide removal, a carbon dioxide solution feed system for pre-degasifier pH adjustment, and post treatment alkalinity recovery. The carbon dioxide system, in conjunction with a new scale inhibitor system, allows for acid free operation of the RO system.

→ Technical Advisor for the Collier County, Florida, Northeast Regional Water Treatment Plant. This $70 million Greenfield 10-mgd brackish RO treatment plant (expandable to 40-mgd) includes a design that must respond to degrading water quality and more than 8-mg/L of hydrogen sulfide. Key features of the RO design include no-acid pretreatment, noise isolation of the RO feed pumping, accessibility to all instruments and valves, and pressure exchanges for energy recovery.

→ Principal-in-charge responsible for pilot testing and engineering analysis of water treatment technologies on Lake Okeechobee as part of the $8.4 billion Comprehensive Everglades Restoration Program (CERP). This study evaluated alternatives for treating Lake Okeechobee water prior to injection in Aquifer Storage and Recovery (ASR) wells. Pilot study results were used to develop design criteria and cost estimates for the 1.5-billion gallon per day ultimate capacity. The selected treatment train consists of bank filtration (BF), ozonation, and UV disinfection.

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Robert S. Cushing, Ph.D., P.E., BCEE

→ Principal-in-charge for the preliminary design of the Town of Ave Maria, Florida, Reverse Osmosis Water Treatment Plant, Naples, Florida. The project involves a new 1.5-mgd Water Treatment Plant located on a new site that provides water for a new community development. Ultimate site capacity requires that infrastructure be provided for expansion to 9-mgd. Reverse osmosis system designed to remove hardness and color from an iron contaminated anaerobic groundwater supply.

→ Principal-in-charge for the City of Palm Coast, Florida, Nanofiltration Water Treatment Plant expansion from 2.5 to 9.6-mgd. Florida Water Services selected Carollo and Harn R/O Systems as the design build team to design, permit, and construct the expansion in a challenging schedule of only 13 months. Design build services included the re-design of existing nanofiltration equipment and chemical feed systems, the addition of four additional membrane trains, and two additional degasification towers. Re-design of the existing process saves the owner approximately $100,000 per year in Operations and Maintenance costs by taking advantage of new technology that was not available when the plant was originally constructed in 1992.

→ Principal-in-charge for the expansion of South Island Public Service District's Water Treatment Plant in Hilton Head, South Carolina, from 1.5 to 3-mgd. The expansion included the evaluation of how to maximize the use of South Island Public Service District's existing reverse osmosis equipment and evaluation of the electrical and mechanical infrastructure to assess any required upgrades. Carollo developed designs and specifications for new reverse osmosis treatment equipment and associated electrical and mechanical system upgrades, as well as the pretreatment equipment that included a heat exchanger and cooling tower process, used to cool South Island Public Service District's geothermal, brackish groundwater from 122°F to 104°F.

→ Technical Advisor for the from conventional to DAF treatment and addition of ozone for the 50-mgd Harwood's Mill WTP in Newport News, Virginia. Pilot- and bench-scale testing of process alternatives for disinfection by-product (DBP) control and filter optimization for the USCOE WAD water supply for Washington, D.C. Alternative preoxidants, coagulation strategies, ozonation, and chloramination were evaluated for impact on DBP control and particle removal.

→ Technical advisor for the design of the Miami-Dade Water and Sewer Department, Florida, 225-mgd Hialeah and Water Treatment Plants. This project identified and recommended process modifications and improvements to the conventional softening water treatment plants on the existing site or remotely to address a reclassification of one of the water sources as Ground Water Under the Direct Influence of Surface Water.

→ Technical advisor and project director for the 54-mgd ultrafiltration (UF) Lake Manatee Water Treatment Plant, Manatee County, Florida. Project included design and construction phase engineering services for the retrofit of media filters at the plant. At time of design, this represented the largest MF/UF retrofit in the US and Florida's largest low-pressure membrane facility. Project components included: new pre-screens, UF membrane system, backwash system, CIP system, and integration with existing infrastructure. Key tasks include evaluation of existing pretreatment for compatibility with UF, prequalification of membrane system suppliers, predesign and membrane procurement documents, membrane supplier evaluation and selection, pilot testing, permitting, final design, construction phase services, and start-up and warranty.

→ Principal-in-charge for a project adding high level disinfection (tertiary filtration and disinfection upgrades) to Miami Dade's South Wastewater Treatment plant (225 mg/L pure oxygen facility). Responsible for overall regulatory and process aspects as well as design of low lift pump station and disinfection system.

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Lyle D. Munce, P.E.

Lyle Munce, a vice president with Carollo Engineers, has 31 years of environmental/civil engineering experience, with an emphasis on municipal water systems. He has served as client manager, project manager, project engineer, quality control coordinator, technical reviewer, and construction manager for numerous multi-disciplinary water related projects. Mr. Munce's project experience and technical expertise include membrane treatment, lime softening treatment, pilot- and bench-scale programs, raw and finished water quality analysis, concentrate injection well design and permitting, and air stripping and odor control. In addition he is experienced in preliminary and detailed final design of water treatment systems, water well design and permitting, comprehensive master planning, water treatment feasibility evaluations, Design Build document production, construction management and administration, design of water and wastewater transmission facilities, utility system acquisition, and water systems operations consultation.

Education

MS Sanitary Engineering, South Dakota State University, 1987

BS Civil Engineering, South Dakota State University, 1985

Licenses

Professional Engineer, Florida

Professional Affiliations

Florida Engineering Society

American Water Works Association

Water Quality/Treatment

→ Principal-in-charge for the City of Riviera Beach Utility District (CRBUD), Florida, Water Treatment Plant Evaluation. This project includes the evaluation of the process systems at the CRBUD Water Treatment Plant to determine the expected performance of each process system. The evaluation will identify expected performance of each process system in terms of intended function and capacity along with a review of meeting established permitted regulatory criteria. This effort included review of existing documents, performing process calculations, interviews with operations staff, and review of application permits and regulatory criteria. Also included was the evaluation of the existing treatment system hydraulics. Carollo will also provide training seminars to CRBUD staff based upon topics identified during the above evaluation.

→ Principal-in-charge for the Procurement of the Design-Build contract of the L-8 Reservoir Modifications, Pump Station, and Inflow Structure project for the South Florida Water Management District. This project will control water flow for restoration and water quality buffering in the Stormwater Treatment Areas (STAs) of southeast Florida.

→ Project manager for the City of Sunrise, Florida, Springtree Water Treatment Plant Improvements Project. Project elements include general renewal and replacement of the 24-mgd lime softening facility, design of a fluidized bed ion exchange treatment system, a 1.5-mgd RO treatment system and the repurposing of an existing ASR well to a Floridan production well. General site improvements included stormwater management system redesign as part of the overall project.

→ Project manager for the City of Sunrise, Florida, 18-mgd Sawgrass Water Treatment Plant Improvements Project. Project elements include an organics control treatment system with chemical oxidation, prefiltration, and fixed-bed ion exchange; evaluating conversion of an existing nanofiltration treatment train to RO; and the design of an independent RO treatment system.

→ Project manager for the Palm Beach County Water Utilities Department (PBCWUD), Florida Water Treatment Plant (WTP) Magnetic Ion Exchange (MIEX®) Treatment System No. 2. Responsible for design of a 16.4-mgd MIEX® treatment system to achieve color reduction and dissolved organic carbon removal from the source water, as well as reduce disinfection byproducts (DBPs). The system will process raw water from PBCWUD's System 2 WTP by flowing it through ion exchange contactors utilizing state of the art pumping systems where greater than 70% of the organic content of the water will be removed. The flow from this system subsequently flows through the remainder of the existing lime softening treatment plant and then to service area distribution. The MIEX® system replaces an obsolete ozone system and will save the County approximately $265,000/yr. in operating costs, compared to the ozone generation system. At the time of startup and commissioning (early 2011) this system

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Lyle D. Munce, P.E.

will be the largest of its type in North America. General site improvements and stormwater management system redesign was incorporated into the overall design and construction efforts.

→ Partner-in-charge/Project manager for the PBCWUD Water Treatment Plant 8 – Ion Exchange Bench-Scale Bypass Study. Providing services to study the potential impacts to the ion exchange treatment system at System 8 WTP should some amount of un-softened water be blended with the influent to the ion exchange system.

→ Project manager/Project engineer for the SFWMD surface water Compartment C Stormwater Treatment Area project. Providing engineering services during construction of a Compartment C Stormwater Treatment Area in an effort to clean up waters flowing to the Everglades. Construction includes new seepage canals, inflow canal, spreader and collector canals, grated inflow structures, and associated levees.

→ Project manager for the SFWMD's Water Desalination Concentrate Management and Piloting project, which was completed in December 2009. This water resource project effort included the review and evaluation of brackish water RO concentrate at up to 20 desalination WTPs located within the SFWMD service area. The feasibility portion of the project identified four potential treatment methods to recover additional water from RO concentrate. The method deemed most appropriate for SE Florida utilities was piloted at the North Miami Beach Norwood Water Treatment Facility. It was determined that he piloted method of recovery was a viable alternative for WTPs within the SFWMD service area.

→ Project manager for the design of the City of Sunrise, Florida $40 million, Sawgrass Water Treatment Plant. This project consisted of 18 mgd of nanofiltration capacity including all chemical feed, pumping, odor control, ozone and residual disinfection systems, concentrate injection well, stormwater infrastructure, remote pumping station, and instrumentation and control systems. Treatment system design incorporated state-of-the-art pumping and chemical feed advancements which serve to increase membrane treatment efficiency in terms of operating costs while serving to enhance treated water quality.

→ Project manager and client liaison for the construction for the City of Miramar Florida's $35 million, 12.0-mgd (4.5 mgd initial capacity) Western Water Treatment Plant membrane softening facility. Construction consisted of membrane process building and treatment systems which include chemical feed, air stripping, pumping, instrumentation, controls and power systems, site improvements, deep injection wells and raw water wells. Start-up and training services along with operations monitoring and assistance were also provided.

→ Project manager for the construction for the Village of Royal Palm Beach 3.0 mgd (1.5 mgd initial) membrane softening facility in Florida. Construction consisted of membrane process building and treatment system, which included chemical feed, air stripping, pumping, instrumentation, controls and power systems, and site improvements. Start-up and training services along with operations monitoring and assistance was also provided.

→ Project design manager for the North Lee County Reverse Osmosis Water Treatment Facility, Florida. This facility had an initial capacity of 6 mgd, expandable to its build-out capacity of 10 mgd. The project consisted of a Florida aquifer wellfield, membrane, pretreatment, RO skids, post treatment, and concentrate disposal via a deep injection well. The pretreatment systems are comprised of anti-scalant and sulfuric acid addition, followed by cartridge filtration. Actual treatment is accomplished utilizing two RO treatment skids, which are followed by degasification, disinfection and distribution system storage and pumping.

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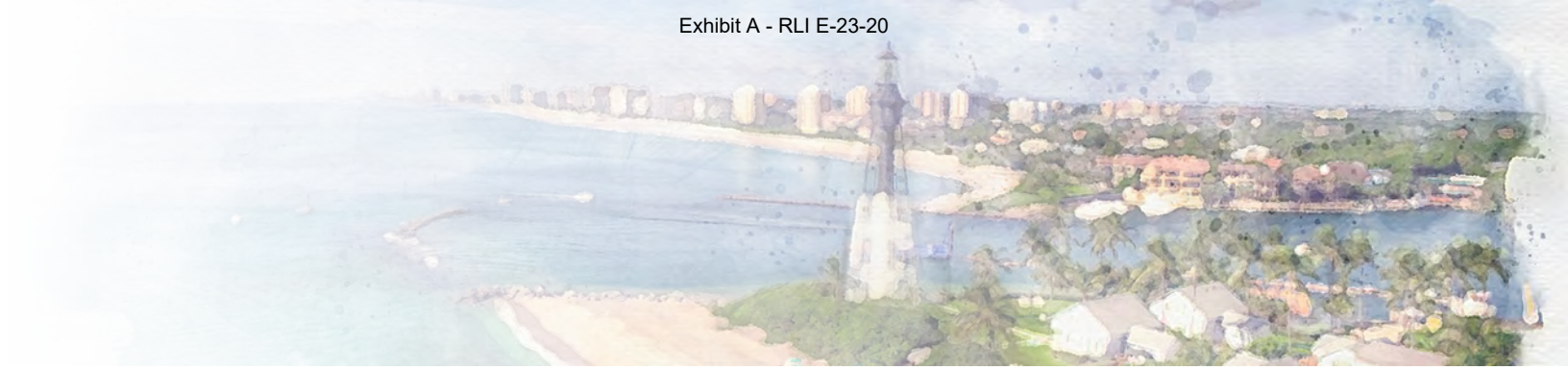
• *SECTION 8: OFFICE LOCATIONS*



Office Locations

Carollo's Coral Springs office is just over nine miles from the City of Pompano Beach.

Carollo will provide responsive service from our Coral Springs office, which is 9.9 miles away from the City's WTP. We currently have 24 staff to serve the City from our Coral Springs and West Palm Beach offices, and this team has met nearly every need on your past projects with very few exceptions.

Carollo has approximately 80 other staff throughout other Florida offices and 1,100 staff nationwide. All of our staff are electronically linked and used to working on a daily basis in this manner, particularly during the Covid-19 "work remotely" need.

In addition to Gamboa Engineers, which in located in Southwest Ranches, FL, Carollo will be assisted by three Pompano Beach-based firms: DK Architects, Compass Point Surveyors and Quest Engineering Services & Testing.

CAROLLO'S LOCAL OFFICE

2728 North University Drive,
Building 2700
Coral Springs, Florida 33065
Ph: 954-837-0030 | Fax: 954-837-0035

– Professional Staff: 12
– Administrative Staff: 1

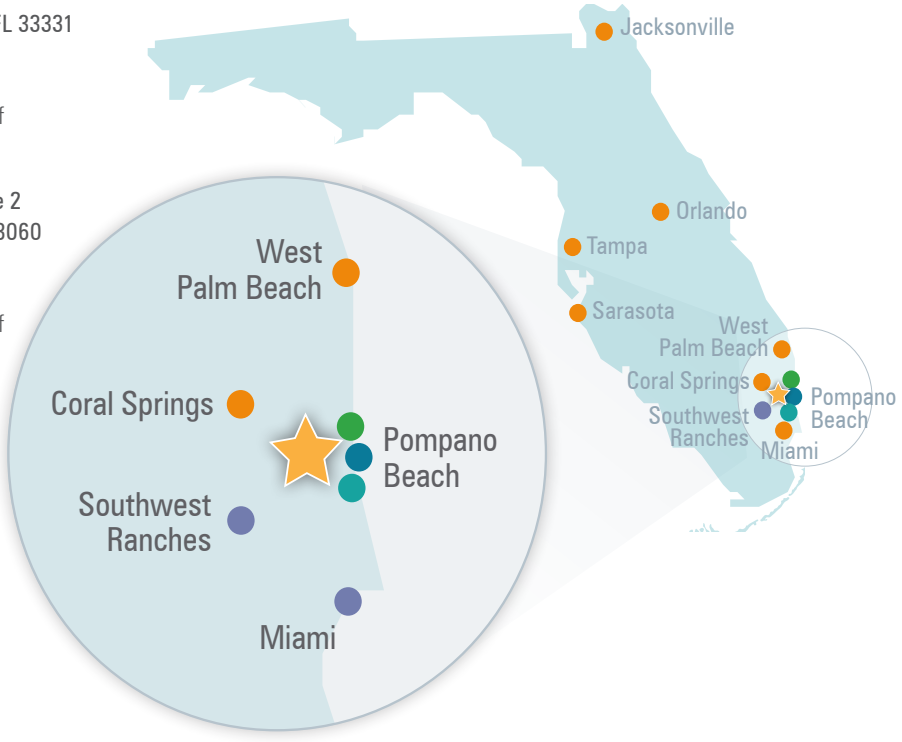
Carollo Engineers West Palm Beach
2056 Vista Pkwy Suite 400
West Palm Beach, FL 33411
Ph: 561-868-6400
– 10 Professional Staff
– 1 Administrative Staff

Compass Point Surveyors
3195 N. Powerline Road #112
Pompano Beach, Florida 33069
Ph: 954-332-8181
– 9 Professional Staff
– 2 Administrative Staff

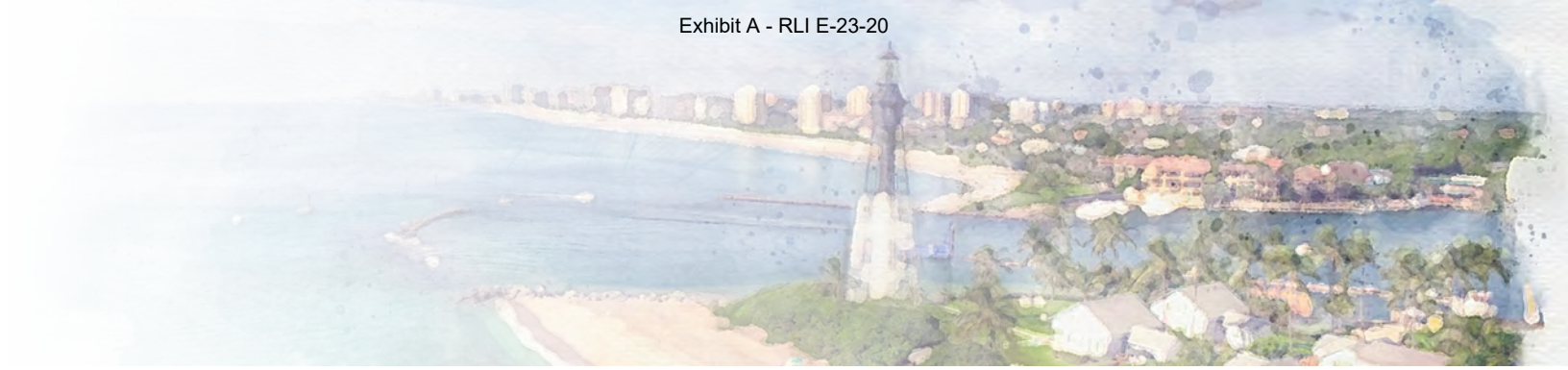
Quest Engineering Services & Testing, Inc.
2737 NW 19th Street
Pompano Beach, FL 33069
Ph: 954-582-9800
– 7 Professional Staff
– 3 Administrative Staff

Gamboa Engineers, LLC
17433 SW 65 CT
Southwest Ranches, FL 33331
Ph: 954-533-1121
– 6 Professional Staff
– 1 Administrative Staff

DK Architects
61 NE 1st Street, Suite 2
Pompano Beach, FL 33060
Ph: 954-941-3329
– 3 Professional Staff
– 1 Administrative Staff



• *SECTION 9: LOCAL BUSINESSES*



Local Businesses

LOCAL BUSINESS EXHIBIT "A"
CITY OF POMPANO BEACH, FLORIDA
LOCAL BUSINESS PARTICIPATION FORM

Solicitation Number & Title: E-23-20 Continuing Contract for Engineering Services for Water and Reuse Treatment Plant Projects

Prime Contractor's Name: Carollo Engineers, Inc.

Name of Firm, Address	Contact Person, Telephone Number	Type of Work to be Performed/Material to be Purchased	Contract Amount or %
Design Kollaborative (DK) Architects/Planners, Inc.	Andre Capi (954) 941-3329 Ext. 1	Architecture, Site Plan, and Permitting	TBD*
61 NE 1st Street, Suite 2 Pompano Beach, FL 33060			
Compass Point Surveyors, PL	Scott Reid (954) 332-8181	Survey	TBD*
3710 Park Central Boulevard Pompano Beach, FL 33064			
Quest Engineering Services & Testing, Inc.	R. N. Saliappan (954) 582-9800	Geotechnical	TBD*
2737 NW 19th Street Pompano Beach, FL 33069			

*Carollo is committed to meeting the required goal of 20% local business participation. The actual breakdown will be determined in the future.

LOCAL BUSINESS EXHIBIT "A"

LOCAL BUSINESS EXHIBIT "B"
LOCAL BUSINESS
LETTER OF INTENT TO PERFORM AS A LOCAL SUBCONTRACTOR

Solicitation Number E-23-20

TO: Carollo Engineers, Inc.
(Name of Prime or General Bidder)

The undersigned City of Pompano Beach business intends to perform subcontracting work in connection with the above contract as (check below)

_____ an individual
X a corporation
_____ a partnership
_____ a joint venture

The undersigned is prepared to perform the following work in connection with the above Contract, as hereafter described in detail:

Surveying services.

at the following price: TBD

8/6/2020
(Date)

Compass Point Surveyors, PL
(Print Name of Local Business Contractor)

3710 Park Central Blvd N.
(Street Address)

Pompano Beach, Florida 33064
(City, State Zip Code)

BY: _____
(Signature)

IMPORTANT NOTE: Signatures on this form MUST be by an authorized employee of Subcontractor and must be uploaded to the Response Attachment Tab

LOCAL BUSINESS EXHIBIT "B"

LOCAL BUSINESS EXHIBIT "B"
LOCAL BUSINESS
LETTER OF INTENT TO PERFORM AS A LOCAL SUBCONTRACTOR

Solicitation Number E-23-20

TO: Carollo Engineers, Inc.
(Name of Prime or General Bidder)

The undersigned City of Pompano Beach business intends to perform subcontracting work in connection with the above contract as (check below)

_____ an individual X a corporation

_____ a partnership _____ a joint venture

The undersigned is prepared to perform the following work in connection with the above Contract, as hereafter described in detail:

New building facility design and site planning, permitting, LEED certification,
and construction administration.

at the following price: TBD

8/6/2020
(Date)

Design Kollaborative Architects/Planners
(Print Name of Local Business Contractor)

61 NE 1st St., Suite 2
(Street Address)

Pompano Beach, FL 33060
(City, State Zip Code)

BY: _____
(Signature)

IMPORTANT NOTE: Signatures on this form MUST be by an authorized employee of Subcontractor and must be uploaded to the Response Attachment Tab

LOCAL BUSINESS EXHIBIT "B"

LOCAL BUSINESS EXHIBIT "B"
LOCAL BUSINESS
LETTER OF INTENT TO PERFORM AS A LOCAL SUBCONTRACTOR

Solicitation Number E-23-20

TO: Carollo Engineers, Inc.
(Name of Prime or General Bidder)

The undersigned City of Pompano Beach business intends to perform subcontracting work in connection with the above contract as (check below)

_____ an individual
X a corporation
_____ a partnership
_____ a joint venture

The undersigned is prepared to perform the following work in connection with the above Contract, as hereafter described in detail:

Geotechnical engineering, construction materials testing, and special (structural) inspection services.

at the following price: TBD

8/6/2020
(Date)

Quest Engineering Services & Testing, Inc.
(Print Name of Local Business Contractor)

2737 NW 19th St.
(Street Address)

Pompano Beach, FL 33069
(City, State Zip Code)

BY: K. V. Sailappan
(Signature)

IMPORTANT NOTE: Signatures on this form MUST be by an authorized employee of Subcontractor and must be uploaded to the Response Attachment Tab

LOCAL BUSINESS EXHIBIT "B"

LOCAL BUSINESS EXHIBIT "C

LOCAL BUSINESS
UNAVAILABILITY FORM

BID #_____

I,_____
(Name and Title)

of_____, certify that on the _____day of

_____, _____, I invited the following LOCAL BUSINESSES to bid work items to be performed in the City of Pompano Beach:

Business Name, Address	Work Items Sought	Form of Bid Sought (i.e., Unit Price, Materials/Labor, Labor Only, etc.)
	N/A	

Said Local Businesses:

___ Did not bid in response to the invitation

___ Submitted a bid which was not the low responsible bid

___ Other:_____

Name and Title: _____

Date: _____

Note: Attach additional documents as available.

LOCAL BUSINESS EXHIBIT "D"
GOOD FAITH EFFORT REPORT
LOCAL BUSINESS PARTICIPATION

BID # E-23-20

1. What portions of the contract have you identified as Local Business opportunities?

Architecture, Site Planning, and Permitting

Surveying

Geotechnical

2. Did you provide adequate information to identified Local Businesses? Please comment on how you provided this information.

Yes

3. Did you send written notices to Local Businesses?

____ Yes _X_ No

If yes, please include copy of the notice and the list of individuals who were forwarded copies of the notices.

4. Did you advertise in local publications?

____ Yes _X_ No

If yes, please attach copies of the ads, including name and dates of publication.

5. What type of efforts did you make to assist Local Businesses in contracting with you ?

Emails and Phone Calls

7. List the Local Businesses you will utilize and subcontract amount.

Design Kollaborative (DK) Architects/Planners, Inc.	$ TBD*
Compass Point Surveyors, PL	$ TBD*
Quest Engineering Services and Testing, Inc.	$ TBD*

*Carollo is committed to meeting the required goal of 20% local business participation. The actual breakdown will be determined in the future.

8. Other comments: _____

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-831-4000

VALID OCTOBER 1, 2019 THROUGH SEPTEMBER 30, 2020

DBA:
Business Name: COMPASS POINT SURVEYORS PL

Receipt #: 319-3570
Business Type: ALL OTHERS (SURVEYING & MAPPING)

Owner Name: BENJAMIN WISER
Business Location: 3195 N POWERLINE RD #112
POMPANO BEACH
Business Phone: 727-230-9606

Business Opened: 08/04/2009
State/County/Cert/Reg: LB7535
Exemption Code:

Rooms	Seats	Employees	Machines	Professionals
		1		

	For Vending Business Only					
	Number of Machines:		Vending Type:			
Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
30.00	0.00	0.00	0.00	0.00	0.00	30.00

THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS

THIS BECOMES A TAX RECEIPT

WHEN VALIDATED

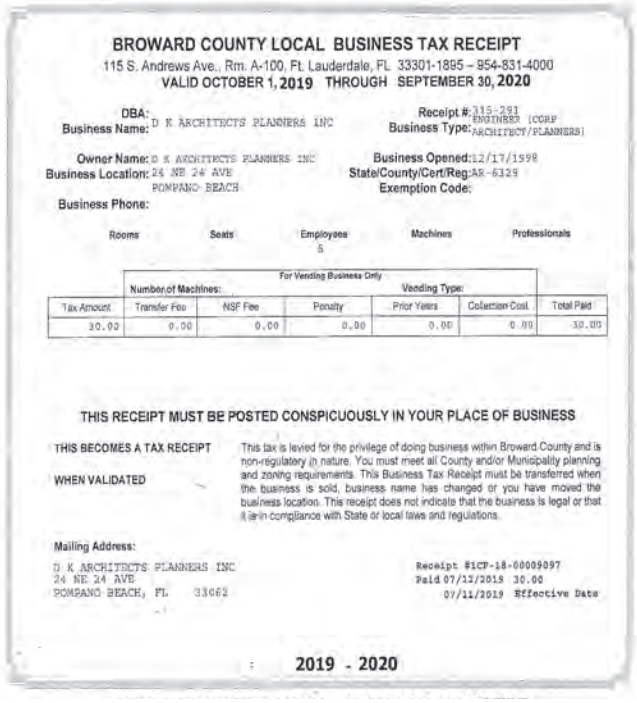
This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

Mailing Address:

BENJAMIN WISER
3195 N POWERLINE ROAD #112
POMPANO BEACH, FL 33069

Receipt #WWW-18-00178193
Paid 07/08/2019 30.00

2019 - 2020



BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-831-4000

VALID OCTOBER 1, 2019 THROUGH SEPTEMBER 30, 2020

DBA:
Business Name: D K ARCHITECTS PLANNERS INC

Receipt #: 315-291
Business Type: ENGINEER (CORP ARCHITECT/PLANNERS)

Owner Name: D K ARCHITECTS PLANNERS INC
Business Location: 24 NE 24 AVE
POMPANO BEACH
Business Phone:

Business Opened: 12/17/1998
State/County/Cert/Reg: AR-6329
Exemption Code:

Rooms	Seats	Employees	Machines	Professionals
		5		

	For Vending Business Only					
	Number of Machines:		Vending Type:			
Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
30.00	0.00	0.00	0.00	0.00	0.00	30.00

THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS

THIS BECOMES A TAX RECEIPT

WHEN VALIDATED

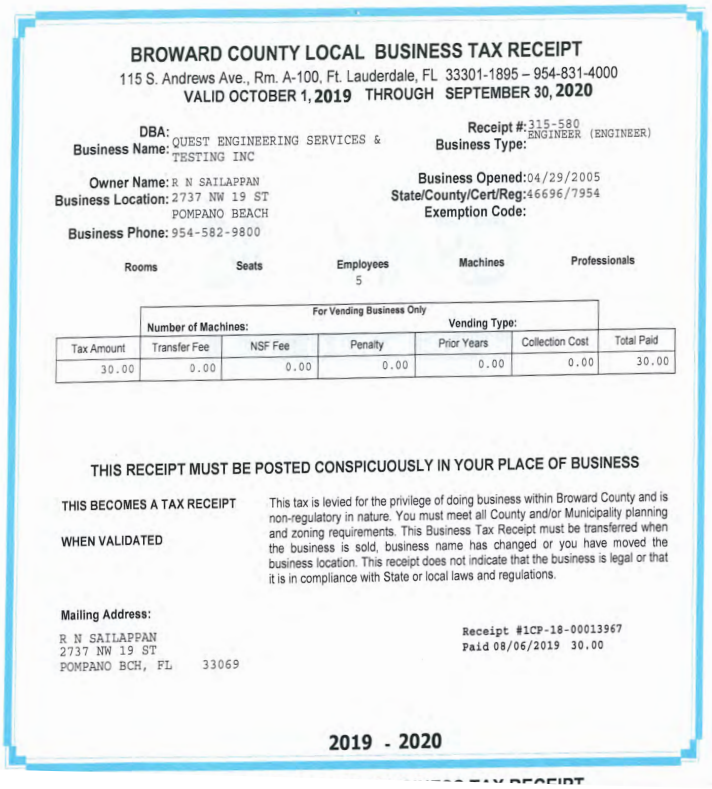
This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

Mailing Address:

D K ARCHITECTS PLANNERS INC
24 NE 24 AVE
POMPANO BEACH, FL 33062

Receipt #1CP-18-00009097
Paid 07/12/2019 30.00
07/11/2019 Effective Date

2019 - 2020



BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-831-4000

VALID OCTOBER 1, 2019 THROUGH SEPTEMBER 30, 2020

DBA:
Business Name: QUEST ENGINEERING SERVICES & TESTING INC

Receipt #: 315-580
Business Type: ENGINEER (ENGINEER)

Owner Name: R N SAILAPPAN
Business Location: 2737 NW 19 ST
POMPANO BEACH
Business Phone: 954-582-9800

Business Opened: 04/29/2005
State/County/Cert/Reg: 46696/7954
Exemption Code:

Rooms	Seats	Employees	Machines	Professionals
		5		

	For Vending Business Only					
	Number of Machines:		Vending Type:			
Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
30.00	0.00	0.00	0.00	0.00	0.00	30.00

THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS

THIS BECOMES A TAX RECEIPT

WHEN VALIDATED

This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

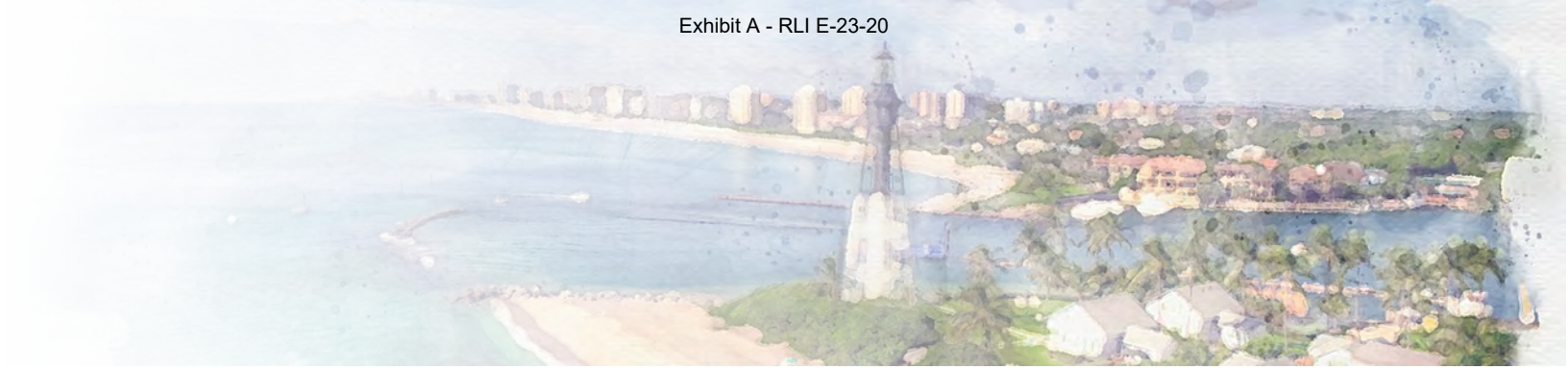
Mailing Address:

R N SAILAPPAN
2737 NW 19 ST
POMPANO BCH, FL 33069

Receipt #1CP-18-00013967
Paid 08/06/2019 30.00

2019 - 2020

• *SECTION 10: LITIGATION*

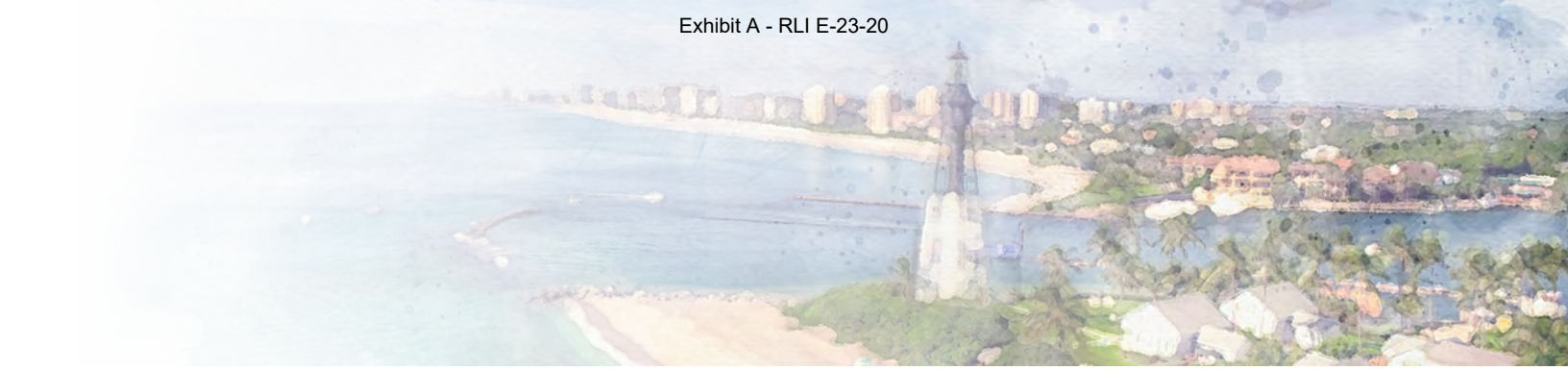


Litigation

Carollo has been involved in the following litigation within the past five (5) years arising out of our firm's performance of professional services:

- In 2015, Carollo and a client were both the subject of a lawsuit filed by a homeowner related to dwindling water supplies and questioned water rights. Carollo was subsequently dismissed from the lawsuit, but that dismissal is now under appeal.
- In 2015, Carollo and others were the subject of a lawsuit filed by the spouse of deceased prison inmate alleging that contaminated water at the prison caused the inmate's death. Carollo was subsequently dismissed from the lawsuit.
- In 2015, Carollo, Carollo's client, and others were the subject of a lawsuit filed by an employee of the client who was injured while performing maintenance activities not related to Carollo's design improvements and/or Carollo services to the client. Carollo was subsequently dismissed from the lawsuit.
- In 2015, Carollo and a paint manufacturer were the subject of a lawsuit filed by a coatings subcontractor related to the subcontractor's failure to properly prepare the painting substrate and the resultant failure of the coating. The matter was submitted to mediation and thereafter settled with no admission of fault by Carollo.
- In 2016, Carollo and a client were both the subject of a civil lawsuit filed by the construction contractor on a water supply project related to the construction contractor's claim of changed subsurface conditions. Carollo was subsequently dismissed from the lawsuit.
- In 2017, Carollo was brought into a lawsuit between a client and the construction contractor claiming project delays related to the construction of a new wastewater treatment plant. Carollo denies responsibility for any of the claims. The lawsuit is in progress.
- In 2018, Carollo, the construction contractor, and the client were the subject of a lawsuit filed by property owners along a sewer interceptor realignment project where construction operations extended beyond the originally projected construction completion date. The matter was submitted to mediation and thereafter settled with no admission of fault by Carollo.
- In 2019, Carollo and several other large water engineering firms doing business in Florida were sued by a private citizen who has a history of suing governmental entities (i.e., his most recent lawsuit was against the Federal Reserve). The overall allegations of the citizen center around claims that Carollo was working with the other noted water firms to hide an alleged underground water source on the plaintiff's/citizen's property from our Florida clients. The lawsuit was dismissed.
- In 2020, Carollo and their joint venture partner were the subject of a lawsuit filed by a client related to tank corrosion as part of a design-build project completed in 2005. Carollo denies responsibility for any of the claims. The lawsuit is in progress.

• *SECTION 11: CITY FORMS*



City Forms

COMPLETE THE PROPOSER INFORMATION FORM ON THE ATTACHMENTS TAB IN THE EBID SYSTEM. PROPOSERS ARE TO COMPLETE FORM IN ITS ENTIRITY AND INCLUDE THE FORM IN YOUR PROPOSAL THAT MUST BE UPLOADED TO THE RESPONSE ATTACHMENTS TAB FOR THE RFP IN THE EBID SYSTEM.

PROPOSER INFORMATION PAGE

RFP E-23-20 (number), Continuing Contract for Engineering Services For Water and Reuse Treatment Plant Projects (RFP name)

To: The City of Pompano Beach, Florida

The below named company hereby agrees to furnish the proposed services under the terms stated subject to all instructions, terms, conditions, specifications, addenda, legal advertisement, and conditions contained in the RFP. I have read the RFP and all attachments, including the specifications, and fully understand what is required. By submitting this proposal, I will accept a contract if approved by the City and such acceptance covers all terms, conditions, and specifications of this proposal.

Proposal submitted by:

Name (printed) Elizabeth Fujikawa, PE, BCEE, LEED AP Title Vice President

Company (Legal Registered) Carollo Engineers, Inc.

Federal Tax Identification Number 86-0899222

Address 2728 North University Drive, Building 2700

City/State/Zip Coral Springs, FL 33065

Telephone No. 954-837-0030 Fax No. 954-837-0035

Email Address efujikawa@carollo.com

TIER 1/TIER 2 COMPLIANCE FORM

IN ORDER FOR YOUR FIRM TO COMPLY WITH THE CITY'S LOCAL BUSINESS PROGRAM AS A TIER 1 OR TIER 2 VENDOR, BIDDERS MUST COMPLETE THE INFORMATION BELOW AND UPLOAD THE FORM TO THE RESPONSE ATTACHMENTS TAB IN THE EBID SYSTEM.

TIER 1 LOCAL VENDOR

_____ My firm has maintained a permanent place of business within the city limits and maintains a staffing level, within this local office, of at least 10 % who are residents of the City of Pompano Beach.

And/Or

_____ My firm has maintained a permanent place of business within the city limits and my submittal includes subcontracting commitments to Local Vendors Subcontractors for at least 10 % of the contract value.

Or

__X__ My firm does not qualify as a Tier 1 Vendor.

TIER 2 LOCAL VENDOR

_____ My firm has maintained a permanent place of business within Broward County and maintains a staffing level, within this local office, of at least 15% who are residents of the City of Pompano Beach

And/Or

__X__ My firm has maintained a permanent place of business within Broward County and my submittal includes subcontracting commitments to Local Vendors Subcontractors for at least 20% of the contract value.

Or

_____ My firm does not qualify as a Tier 2 Vendor.

I certify that the above information is true to the best of my knowledge.

8/10/2020
(Date)

Carollo Engineers, Inc.
(Name of Firm)

BY: Elizabeth Fujikawa, PE, BCEE, LEED AP
(Name)

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-831-4000

VALID OCTOBER 1, 2019 THROUGH SEPTEMBER 30, 2020

DBA:
Business Name: CAROLLO ENGINEERS INC

Receipt #: 315-581
Business Type: ENGINEER (ENGINEER)

Owner Name: CAROLLO ENGINEERS INC
Business Location: 2728 N UNIVERSITY DR BLDG 270
CORAL SPRINGS

Business Opened: 01/01/2005
State/County/Cert/Reg: 8571
Exemption Code:

Business Phone: 954-837-0030

Rooms	Seats	Employees	Machines	Professionals
		2		

For Vending Business Only
Number of Machines: Vending Type:

Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
30.00	0.00	0.00	0.00	0.00	0.00	30.00

THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS

THIS BECOMES A TAX RECEIPT

WHEN VALIDATED

This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

Mailing Address:

CAROLLO ENGINEERS, INC
4600 E WASHINGTON ST STE 500
PHOENIX, AZ 85034

Receipt #10B-18-00002380
Paid 07/15/2019 30.00

2019 - 2020

BIDDERS ARE TO COMPLETE FORM AND UPLOAD COMPLETED FORM TO THE EBID SYSTEM

EXHIBIT E

MINORITY BUSINESS ENTERPRISE PARTICIPATION

RLI #E-23-20

List all members of your team that are a certified Minority Business Enterprise (as defined by the State of Florida.) You must include copies of the MBE certificates for each firm listed with your electronic submittal.

Name of Firm	Certificate Included?
Gamboa Engineers, LLC	Yes
Quest Engineering Services & Testing, Inc.	Yes

State of Florida

Minority Business Certification

Gamboa Engineers, LLC

Is certified under the provisions of
287 and 295.187, Florida Statutes, for a period from:

06/06/2019 to 06/06/2021

Jonathan R. Satter, Secretary
Florida Department of Management Services

office of supplier DIVERSITY

Office of Supplier Diversity • 4050 Esplanade Way, Suite 380 • Tallahassee, FL 32399 • 850-487-0915 • www.dms.myflorida.com/osd

State of Florida

Minority Business Certification

Quest Engineering Sevices & Testing, Inc.

Is certified under the provisions of
287 and 295.187, Florida Statutes, for a period from:

08/19/2019 to 08/19/2021

Jonathan R. Satter, Secretary
Florida Department of Management Services

Department of MANAGEMENT SERVICES
Office of Supplier Diversity

Office of Supplier Diversity
4050 Esplanade Way, Suite 380
Tallahassee, FL 32399
850-487-0915
www.dms.myflorida.com/osd

carollo

Engineers...Working Wonders With Water®

COMPLETE THE PROJECT TEAM FORM ON THE ATTACHMENTS TAB IN THE EBID SYSTEM. PROPOSERS ARE TO COMPLETE FORM IN ITS ENTIRITY AND INCLUDE THE FORM IN YOUR PROPOSAL THAT MUST BE UPLOADED TO THE RESPONSE ATTACHMENTS TAB FOR THE RLI IN THE EBID SYSTEM.

PROJECT TEAM

RLI NUMBER E-23-20
Federal I.D.# 86-0899222

PRIME

Role	Name of Individual Assigned to Project	Number of Years Experience	Education, Degrees
Client Service Manager	Liz Fujikawa, PE, BCEE, LEED AP	33	MSE Env. Eng. BS Chemistry
Task Manager/ Pumping	Mark Ludwigson, PE	18	MS Eng. BS Eng. Mechanics
Task Manager/ Modeling	Angelica Gregory, PhD, PE	17	PhD Civil MS Civil & Env. BS Civil
Task Manager/ Treatment	Steve Glatthorn, PE	12	MS Env. Eng. BS Civil
Advisory Team	Bob Cushing, PhD, PE, BCEE	30	PhD Civil MS Civil BS Petroleum Eng.
Advisory Team	Lyle Munce, PE	34	MS Sanitary Eng. BS Civil
Master Planning/ Permitting	Laura Baumberger, PE	17	MS Env. Eng. BS Civil BA Spanish
Softening/ Ion Exchange	Vinnie Hart, PE	26	MS Env. Eng. BS Env. Eng. AS Eng. Science
Membranes	Tom Seacord, PE	23	MS Civil & Env. Eng.
Filtration	Patrick Carlson, PE	19	MS Civil & Env. Eng. BS Civil
Residuals	Mark Gross, PE	28	MS Civil & Env. Eng. BS Civil

Reclaimed/ Water Treatment	Rod Reardon, PE, BCEE	42	MS Civil & Sanitary BS Chemical Eng.
Hydraulic/ CFD Analysis	Ed Wicklein, PE	22	MS Civil/Hydraulics BS Civil
Grant Specialist	Seema Chavan, PE	19	MS Env. Eng. BS Civil
Water/Reclaim Treatment	Chris Reinbold, PE	17	MS/BS Civil
Water/Reclaim Treatment	Brian Graham, PE	34	BS Environmental Eng. & Science
Resident Engineer	Terry Storck	26	
Structural Engineer	Joel Smason, PE	44	MS/BS Structural
HVAC/Pumping	Chad Green, PE	11	BS Mechanical Eng.

SUB-CONSULTANT

Role	Company Name and Address of Office Handling This Project	Name of Individual Assigned to the Project
Surveying	Compass Point Surveyors 3195 N Powerline Road, Suite 112 Pompano Beach, FL 33069	Scott A. Reid
Electrical	Gamboa Engineers, LLC 17433 SW 65th Court Southwest Ranches, FL 33331	Mario Gamboa, PE
Architectural	DK Architectural 61 NE 1st Street, Suite 2 Pompano Beach, FL 33060	Andre Capi Blaise McGinley Daniel Suarez
Geotechnical	Quest Engineering Services 2737 NW 19th Street Pompano Beach, FL 33069	Reza Javidan, PE Joseph Simhon, PE

LOCAL BUSINESS EXHIBIT "A"
CITY OF POMPANO BEACH, FLORIDA
LOCAL BUSINESS PARTICIPATION FORM

Solicitation Number & Title: E-23-20 Continuing Contract for Engineering Services for Water and Reuse Treatment Plant Projects

Prime Contractor's Name: Carollo Engineers, Inc.

Name of Firm, Address	Contact Person, Telephone Number	Type of Work to be Performed/Material to be Purchased	Contract Amount or %
Design Kollaborative (DK) Architects/Planners, Inc.	Andre Capi (954) 941-3329 Ext. 1	Architecture, Site Plan, and Permitting	TBD*
61 NE 1st Street, Suite 2 Pompano Beach, FL 33060			
Compass Point Surveyors, PL	Scott Reid (954) 332-8181	Survey	TBD*
3710 Park Central Boulevard Pompano Beach, FL 33064			
Quest Engineering Services & Testing, Inc.	R. N. Saliappan (954) 582-9800	Geotechnical	TBD*
2737 NW 19th Street Pompano Beach, FL 33069			

*Carollo is committed to meeting the required goal of 20% local business participation. The actual breakdown will be determined in the future.

LOCAL BUSINESS EXHIBIT "B"
LOCAL BUSINESS
LETTER OF INTENT TO PERFORM AS A LOCAL SUBCONTRACTOR

Solicitation Number E-23-20

TO: Carollo Engineers, Inc.
(Name of Prime or General Bidder)

The undersigned City of Pompano Beach business intends to perform subcontracting work in connection with the above contract as (check below)

_____ an individual
X a corporation
_____ a partnership
_____ a joint venture

The undersigned is prepared to perform the following work in connection with the above Contract, as hereafter described in detail:

Surveying services.

at the following price: TBD

8/6/2020
(Date)

Compass Point Surveyors, PL
(Print Name of Local Business Contractor)

3710 Park Central Blvd N.
(Street Address)

Pompano Beach, Florida 33064
(City, State Zip Code)

BY: _____
(Signature)

IMPORTANT NOTE: Signatures on this form MUST be by an authorized employee of Subcontractor and must be uploaded to the Response Attachment Tab

LOCAL BUSINESS EXHIBIT "B"

LOCAL BUSINESS EXHIBIT "B"
LOCAL BUSINESS
LETTER OF INTENT TO PERFORM AS A LOCAL SUBCONTRACTOR

Solicitation Number E-23-20

TO: Carollo Engineers, Inc.
(Name of Prime or General Bidder)

The undersigned City of Pompano Beach business intends to perform subcontracting work in connection with the above contract as (check below)

_____ an individual _X_ a corporation

_____ a partnership _____ a joint venture

The undersigned is prepared to perform the following work in connection with the above Contract, as hereafter described in detail:

New building facility design and site planning, permitting, LEED certification,
and construction administration.

at the following price: TBD

8/6/2020
(Date)

Design Kollaborative Architects/Planners
(Print Name of Local Business Contractor)

61 NE 1st St., Suite 2
(Street Address)

Pompano Beach, FL 33060
(City, State Zip Code)

BY: _____
(Signature)

IMPORTANT NOTE: Signatures on this form MUST be by an authorized employee of Subcontractor and must be uploaded to the Response Attachment Tab

LOCAL BUSINESS EXHIBIT "B"

LOCAL BUSINESS EXHIBIT "B"
LOCAL BUSINESS
LETTER OF INTENT TO PERFORM AS A LOCAL SUBCONTRACTOR

Solicitation Number E-23-20

TO: Carollo Engineers, Inc.
(Name of Prime or General Bidder)

The undersigned City of Pompano Beach business intends to perform subcontracting work in connection with the above contract as (check below)

_____ an individual
X a corporation
_____ a partnership
_____ a joint venture

The undersigned is prepared to perform the following work in connection with the above Contract, as hereafter described in detail:

Geotechnical engineering, construction materials testing, and special
(structural) inspection services.

at the following price: TBD

8/6/2020
(Date)

Quest Engineering Services & Testing, Inc.
(Print Name of Local Business Contractor)
2737 NW 19th St.
(Street Address)
Pompano Beach, FL 33069
(City, State Zip Code)
BY: K. Sailappan
(Signature)

IMPORTANT NOTE: Signatures on this form MUST be by an authorized employee of Subcontractor and must be uploaded to the Response Attachment Tab

LOCAL BUSINESS EXHIBIT "B"

LOCAL BUSINESS EXHIBIT “C

LOCAL BUSINESS
UNAVAILABILITY FORM

BID #_____

I,_____
(Name and Title)

of_____, certify that on the _____day of

_____, _____, I invited the following LOCAL BUSINESSES to bid work items to be performed in the City of Pompano Beach:

Business Name, Address	Work Items Sought	Form of Bid Sought (i.e., Unit Price, Materials/Labor, Labor Only, etc.)
	N/A	

Said Local Businesses:

___ Did not bid in response to the invitation

___ Submitted a bid which was not the low responsible bid

___ Other:_____

Name and Title: _____

Date: _____

Note: Attach additional documents as available.

LOCAL BUSINESS EXHIBIT "D"
GOOD FAITH EFFORT REPORT
LOCAL BUSINESS PARTICIPATION

BID # E-23-20

1. What portions of the contract have you identified as Local Business opportunities?

Architecture, Site Planning, and Permitting

Surveying

Geotechnical

2. Did you provide adequate information to identified Local Businesses? Please comment on how you provided this information.

Yes

3. Did you send written notices to Local Businesses?

____ Yes _X_ No

If yes, please include copy of the notice and the list of individuals who were forwarded copies of the notices.

4. Did you advertise in local publications?

____ Yes _X_ No

If yes, please attach copies of the ads, including name and dates of publication.

5. What type of efforts did you make to assist Local Businesses in contracting with you ?

Emails and Phone Calls

7. List the Local Businesses you will utilize and subcontract amount.

Design Kollaborative (DK) Architects/Planners, Inc.	$ TBD*
Compass Point Surveyors, PL	$ TBD*
Quest Engineering Services and Testing, Inc.	$ TBD*

*Carollo is committed to meeting the required goal of 20% local business participation. The actual breakdown will be determined in the future.

8. Other comments: _____

7. List the Local Businesses you will utilize and subcontract percentage of work.

Design Kollaborative (DK) Architects/Planners, Inc.	TBD
Compass Point Surveyors, PL	TBD
Quest Engineering Services & Testing, Inc.	TBD

8. Other comments: _____

_____

_____

_____

_____

BIDDERS ARE TO COMPLETE FORM AND UPLOAD COMPLETED FORM TO THE EBID SYSTEM

EXHIBIT E

MINORITY BUSINESS ENTERPRISE PARTICIPATION

RLI #E-23-20

List all members of your team that are a certified Minority Business Enterprise (as defined by the State of Florida.) You must include copies of the MBE certificates for each firm listed with your electronic submittal.

Name of Firm	Certificate Included?
Gamboa Engineers, LLC	Yes
Quest Engineering Services & Testing, Inc.	Yes

TIER 1/TIER 2 COMPLIANCE FORM

IN ORDER FOR YOUR FIRM TO COMPLY WITH THE CITY'S LOCAL BUSINESS PROGRAM AS A TIER 1 OR TIER 2 VENDOR, BIDDERS MUST COMPLETE THE INFORMATION BELOW AND UPLOAD THE FORM TO THE RESPONSE ATTACHMENTS TAB IN THE EBID SYSTEM.

TIER 1 LOCAL VENDOR

_____ My firm has maintained a permanent place of business within the city limits and maintains a staffing level, within this local office, of at least 10 % who are residents of the City of Pompano Beach.

And/Or

_____ My firm has maintained a permanent place of business within the city limits and my submittal includes subcontracting commitments to Local Vendors Subcontractors for at least 10 % of the contract value.

Or

__X__ My firm does not qualify as a Tier 1 Vendor.

TIER 2 LOCAL VENDOR

_____ My firm has maintained a permanent place of business within Broward County and maintains a staffing level, within this local office, of at least 15% who are residents of the City of Pompano Beach

And/Or

__X__ My firm has maintained a permanent place of business within Broward County and my submittal includes subcontracting commitments to Local Vendors Subcontractors for at least 20% of the contract value.

Or

_____ My firm does not qualify as a Tier 2 Vendor.

I certify that the above information is true to the best of my knowledge.

8/10/2020
(Date)

Carollo Engineers, Inc.
(Name of Firm)

BY: Elizabeth Fujikawa, PE, BCEE, LEED AP
(Name)