Brown AND Caldwell

**QUALIFICATIONS** | Prepared for
City of Hollywood, FL

Construction Administration Services for the

# Drilling of Deep Injection Wells No. 3 & No. 4 at Southern Regional Wastewater Treatment Plant

CITY OF Hollywood FLORIDA

August 6, 2019 | Project No. 19-9119

Section 01

# Title Page

# Title Page

Section 01

Construction Administration Services for the

## Drilling of Deep Injection Wells No. 3 & No. 4 at Southern Regional Wastewater Treatment Plant

August 6, 2019 | Project No. 19-9119

Brown and Caldwell
Broward Office

1580 Sawgrass Corporate Parkway
Suite 400
Sunrise, FL 33323

954.200.7615
Celia Earle, PhD

Section 02

# Table of Contents



# Table of Contents

Section 02

Section 03

# Letter of Transmittal

1580 Sawgrass Corporate Parkway
Suite 400
Sunrise, FL 33323

T: 954.200.7233
F: 954.200.7612

August 6, 2019

Mr. Feng Jiang, PE
Senior Project Manager
Department of Public Utilities
City of Hollywood
P.O. Box 229045.
Hollywood, FL 33022-9045

Subject: Project NO. 19-9119: **Construction Administration Services for the Drilling of Deep Injection Wells No. 3 & No. 4**

Dear Mr. Jiang:

The Brown and Caldwell (BC) Team appreciates this opportunity to continue our proven partnership with the City of Hollywood to bring trusted solutions for the City's needs through this Construction Administration Services for the Drilling of Deep Injection Wells No. 3 & No. 4 at the Southern Regional Wastewater Treatment Plant contract. BC is pleased to submit our Statement of Qualifications to provide construction administration services under this contract. This contract is an important progression milestone in continuing work that BC has performed for the City over the past five years. The collaborative effort among the City, the Florida Department of Environmental Protection (FDEP), and the BC Team that has resulted in a cost-effective Ocean Outfall Legislation (OOL) compliance approach will be partially cemented with the construction of this major component.

Proven Partnership.
Trusted Solutions.

BC, along with its subconsultant McNabb Hydrogeologic Consulting (MHC), planned, permitted and designed these two deep injection wells (DIWs) and the monitoring well. Building on our momentum provided by our continuing efforts that has spanned several years, the BC Team offers the following combination of unique benefits that cannot be matched by any other team and will position the project for a successful outcome:

- ✓ **Readiness to Rapidly Mobilize** – we have already developed a proposal for construction oversight. Due to our intricate knowledge of project details, our team offers expedited contract approval, rapid ramp up to full speed, and ability to avoid further delays to an already constrained schedule.
- ✓ **Unrivaled Knowledge of Design Requirements** – having led the permitting and design efforts, our comprehensive knowledge of design requirements will require no learning curve and attendant delays or clarification needs.
- ✓ **Avoid Pitfalls and Cost of Third-Party Construction Administration** – as both your Engineer of Record and Lead Hydrogeologist for the permitting and design phases, all other teams can only offer third-party oversight with its attendant coordination/ clarification challenges and potential for misinterpretation of the contract requirements.
- ✓ **FDEP Coordination Continuity** – only the BC Team can provide important continuity with FDEP on varied matters relating to the permit requirements, State Revolving Fund (SRF) loan administration and the bigger picture of how the proposed work fits into the overall compliance strategy.

- ✓ **Knowledge of Site-Specific Implementation Coordination Requirements** – with the requirement to obtain the Operating Permit by January 2024 which requires 6 months (minimum) normal operating period with permanent systems, the BC Team understands the supplemental improvements required and has a detailed plan for how they will be integrated into the schedule. Furthermore, our approach will leverage this requirement to further lock in cumulative savings that exceed $200 million.

Additionally, the BC Team offers the City of Hollywood:

- ✓ Credibility with key stakeholders
- ✓ Available and committed local resources
- ✓ Proven performance on similar projects
- ✓ Cohesive and credible team that has a locked-in focus on Hollywood's OOL compliance success
- ✓ A sound record of identifying creative and cost-saving solutions

In addition to BC and MHC, our Team is bolstered with Holtz Consulting Engineers that will assist with the State Revolving Fund reporting, and Gibbs Land Surveyors and Nutting Engineers that will assist during the post-construction activities.

We thank you for the opportunity to present our Statement of Qualifications for this very important project. We hope that your review will determine that we are the Team for the **Construction Administration Services for the Drilling of Deep Injection Wells No. 3 & No. 4**. We look forward to further discussing our qualifications with you. Please feel free to contact me at cearle@brwncald.com or 954.200.7615.

Very truly yours,

**Brown and Caldwell**

Celia D. A. Earle, PhD
Vice President, Client Service Manager

Nigel O. Grace, PE
Vice President, Project Manager

Section 04

# Submittal Questionnaire

ENGINEERING SERVICES QUALIFICATION STATEMENT
AND SUBMITTAL QUESTIONNAIRE

**PROJECT NAME: CONSTRUCTION ADMINISTRATION SERVICES FOR THE DRILLING OF DEEP INJECTION WELLS NO. 3 & NO. 4**
**PROJECT NO.: 19-9119**

## 1. FIRM NAME & OFFICE LOCATION (Mailing Address and Street Address)

Name: Brown and Caldwell

Mailing Address:
Street/PO Box: 1580 Sawgrass Corporate Parkway, Ste 400
City: Sunrise State: FL Zip: 33323

Physical Address (if different from above):
Street:
City: State: Zip:

Phone: (954) 200 - 7615 Ext: Fax: ( 954 ) 200 -7612

Primary E-Mail Address: CEarle@brwncald.com

Web Site Address: www.brownandcaldwell.com

Contacts:
1. Name: Celia Earle Title: Client Service Manager/Vice President
2. Name: Nigel Grace Title: Project Manager/Vice President

## 2. TYPE OF ORGANIZATION

**A. Check One:**

- [X] Corporation (complete Section B and G)
- [ ] Sole Proprietorship (complete Section D)
- [ ] Other (complete Section F and G
- [ ] Partnership (complete Section C and G)
- [ ] Joint Venture (complete Section E and G

**B. If a Corporation, State incorporated:**

State of California

Date of Incorporation: November 7, 1958

State in which Incorporated: California

If an out-of-state corporation that is currently authorized to do business in the State of Florida, give the date of such authorization: May 2, 1977

| Name and Titles of Principal Officers | Date Elected |
|---|---|
| Richard D'Amato | Feb 7, 2019 |
| Craig Goehring | Feb 7, 2019 |
| Meghan Krishnayya | Feb 7, 2019 |
| Amy E. Fairbank | Feb 7, 2019 |
| Robert D. Goodson | Feb 7, 2019 |

**C. If a Partnership, State formed:**

Date of Partnership:

Type of Partnership (General or Limited):

Names and Addresses of Partners:

**D. If Joint Venture, State formed:**

Date of Joint Ventureship:

Names and Addresses of Joint Venturers:

**E. If a Sole Proprietorship, State created:**

Name and Address of Sole Proprietor:

**F. If other than above, please describe:**

**G. Related Parent Company, Divisions, and Subsidiaries:**
(Attach additional information on other office locations, if appropriate)

Brown and Caldwell LLC (Michigan), Brown and Caldwell Constructors, Brown and Caldwell, Ohio, LLC, Brown and Caldwell Consultants Canada Ltd, Eckenfelder Engineering P.C. (dba Brown and Caldwell Associates)

Please attach the following:

a. Corporate Organization Chart — **Attached**
b. Resumes of Principal Staff — **Appendix A includes resumes**
c. Corporate Family Tree — **N/A**
d. Company Brochure/Annual Report — **N/A**

# Corporate Organizational Chart

**PRESIDENT AND CEO**
Rich D'Amato

**CHIEF PEOPLE OFFICER**
Bob Chapman

**CHIEF TECHNICAL OFFICER**
Cindy Paulson

**DIRECTOR OF DIGITAL SERVICES**
Steve Dills

**GENERAL COUNSEL**
Rob Goodson

**CHIEF FINANCIAL OFFICER**
Amy Fairbank

**DIRECTOR OF SALES, MARKETING AND STRATEGY**
Jay Patil

**DIRECTOR OF OPERATIONS**
Marc Damikolas

**SOLUTIONS DELIVERY ENTERPRISE**
Jeff Herr, Consulting Services
Mark Robinson, Design Services
Marc Damikolas, Integrated Project Delivery
Mike Prett, Project Delivery

**OPERATING UNITS**
Dan Bunce, Cal-Desert
Chris Peluso, East
Steve Anderson, West
Sharon Stecker, Private Sector Enterprise

**3. EMPLOYEES AND PERSONNEL** Provide a separate listing for personnel at the corporate (national) level, with the state (Florida) level and for the local office.

| Permanent Office Staff | Number | Avg. Years With Firm | | |
|---|---|---|---|---|
| | | 1-5 | 5-10 | 10+ |
| Administrative | 4 | 4 | | |
| Project Management | 12 | 2 | 10 | |
| Engineers | 13 | 5 | 8 | |
| Design/Drafting | 1 | | 1 | |
| Computer Services | | | | |

| Permanent Office Staff | Number | Avg. Years With Firm | | |
|---|---|---|---|---|
| | | 1-5 | 5-10 | 10+ |
| Clerical /Technicians | | | | |
| Procurement | | | | |
| Project Control and Estimating | | | | |
| Construction Management | 1 | | 1 | |
| Research and Development | | | | |

Local Office Location:
**Broward, Miami and West Palm Beach**

Personnel in Organization by Discipline.

| Discipline | Engineers | | Designers |
|---|---|---|---|
| | Reg | Total | Total |
| Civil | | 1 | |
| Sanitary | | | |
| Structural | | | 1 |
| Mechanical | | 4 | |
| HVAC | | | |
| Process | | | |
| Electrical | | 2 | |
| Instrumentation | | | |
| Industrial | | 6 | |
| | | 13 | 1 |

**3. EMPLOYEES AND PERSONNEL** Provide a separate listing for personnel at the corporate (national) level, with the state (Florida) level and for the local office.

| Permanent Office Staff | Number | Avg. Years With Firm | | |
|---|---|---|---|---|
| | | 1-5 | 5-10 | 10+ |
| Administrative | 5 | 4 | 1 | |
| Project Management | 18 | 2 | 16 | |
| Engineers | 27 | 10 | 17 | |
| Design/Drafting | 3 | | 3 | |
| Computer Services | 1 | 1 | | |

| Permanent Office Staff | Number | Avg. Years With Firm | | |
|---|---|---|---|---|
| | | 1-5 | 5-10 | 10+ |
| Clerical /Technicians | 3 | 1 | 2 | |
| Procurement | | | | |
| Project Control and Estimating | | | | |
| Construction Management | 2 | 1 | 1 | |
| Research and Development | | | | |

Local Office Location:
**Florida**

Personnel in Organization by Discipline.

| Discipline | Engineers | | Designers |
|---|---|---|---|
| | Reg | Total | Total |
| Civil | | 2 | 1 |
| Sanitary | | 11 | |
| Structural | | | 1 |
| Mechanical | | 6 | 1 |
| HVAC | | | |
| Process | | | |
| Electrical | | 3 | |
| Instrumentation | | 2 | |
| Industrial | | 1 | |
| | | 25 | 3 |

**3. EMPLOYEES AND PERSONNEL** Provide a separate listing for personnel at the corporate (national) level, with the state (Florida) level and for the local office.

| Permanent Office Staff | Number | Avg. Years With Firm | | |
|---|---|---|---|---|
| | | 1-5 | 5-10 | 10+ |
| Administrative | 155 | 25 | 47 | 83 |
| Project Management | 405 | 41 | 89 | 275 |
| Engineers | 674 | 71 | 244 | 359 |
| Design/Drafting | 168 | 49 | 45 | 74 |
| Computer Services | 52 | 12 | 17 | 23 |

| Permanent Office Staff | Number | Avg. Years With Firm | | |
|---|---|---|---|---|
| | | 1-5 | 5-10 | 10+ |
| Clerical /Technicians | 50 | 10 | 32 | 8 |
| Procurement | 4 | 1 | 1 | 2 |
| Project Control and Estimating | 12 | 3 | 4 | 4 |
| Construction Management | 15 | 4 | 7 | 4 |
| Research and Development | | | | |

Local Office Location:
**National**

Personnel in Organization by Discipline.

| Discipline | Engineers | | Designers |
|---|---|---|---|
| | Reg | Total | Total |
| Civil | | 157 | 44 |
| Sanitary | | 266 | 12 |
| Structural | | 28 | 10 |
| Mechanical | | 20 | 31 |
| HVAC | | | |
| Process | | 66 | 25 |
| Electrical | | 72 | 15 |
| Instrumentation | | 41 | 15 |
| Industrial | | 24 | 16 |
| | | 674 | 168 |

**Please note Brown and Caldwell has 1600 + employees across multiple disciplines, not all listed above.**

| **Discipline (*Procurement)*** | **Personnel** |
|---|---|
| Capital Equipment Buyers | |
| Subcontract Administrators | |
| Bulk Material Buyers | |
| Inspection/Expediting | |
| Clerical/Technical Support | |

| **Discipline (*Construction Management)*** | **Personnel** |
|---|---|
| Field Superintendents | |
| Home Office Management | |
| Planners (Site, City, Community) | |
| Architects | |
| Other | |

Maximum Man-Hours Available Per Year: **N/A**

Current Estimated Man-Hours Per Year: **N/A**

## 4. FINANCIAL INFORMATION

**A.** Attach a copy of current audited income statement and balance sheet. See attached

## 5. WORK EXPERIENCE:

**A. Types of Services Provided** (Check Yes or No)

| | Yes | No | | Yes | No |
|---|---|---|---|---|---|
| Feasibility Studies | ☒ | ☐ | Stress Analysis* | ☒ | ☐ |
| Drawings | | | | | |
| Preparation of Specifications | ☒ | ☐ | Pipeline | ☒ | ☐ |
| Construction Mgmt. Services | ☒ | ☐ | Surveying | ☒ | ☐ |
| Process Problem Analysis | ☒ | ☐ | Direct Hire Field Construction | ☐ | ☐ |
| Energy Conservation Studies | ☒ | ☐ | Detailed Instrumentation & Control | ☒ | ☐ |
| Soil and Foundation Studies | ☒ | ☐ | Process Design | ☒ | ☐ |
| Foundation Design | ☒ | ☐ | Equipment Design | ☒ | ☐ |
| Structural Design | ☒ | ☐ | Detailed Electrical | ☒ | ☐ |
| Testing Capability | ☒ | ☐ | Detailed Piping Design | ☒ | ☐ |
| Detailed Mechanical | ☒ | ☐ | Construction Management | ☒ | ☐ |

Procurement ☐ ☒ Inspection/Expediting ☒ ☐

**B. Drafting Method Utilized:**

*Manual ☐ Computer ☒ If Computer, What Program: Autodesk Revit 2018, AutoCAD 2018, Autodesk Civil 3D 2018, Autodesk Navisworks 2018, CAD P&ID, Bentley OpenPlant Modeler

**C. Please attach summaries for projects, related to the type of work to be awarded as a result of this submittal, completed by your firms including:**

1) Location of project and client
2) Description of project
3) Your scope of involvement in project
4) Contract type (e.g. reimbursable/fixed fee/fixed price)
5) Approximate value of contract
6) Duration of work
7) Project Manager Utilized

See Section 5B, Project Experience

## 6. EXPERIENCE WITH THE CITY OF HOLLYWOOD

**A. Most Recent City of Hollywood Work Experience: (Date/Location/Description)**

As-Needed Services (2019)

As-Needed Services (2018)

Water Main Replacement Project (2017)

Water Main Replacement Project (2016)

As-Needed Services (2016)

As-Needed Services (2015)

Impact of GW Chlorides on Effluent Quality (2014)

Coastal I/I Mitigation Strategy Development (2014)

**B. Current City of Hollywood Engineering services agreement, if any:** (Agreement Number/Expiration Date/Location/Description)

Contract Title: General Engineering Consultant Services for
Water Treatment Plant and Wastewater Treatment Plant Projects
Contract No.: 17-1324
Date executed: October 25, 2017
Date Expired: October 25, 2021

## 7. SUBCONTRACTED SERVICES:

List Subcontractor/ Sub-consultant firms expected to be utilized, and their portion of the work below:

| Name of Firm | Area of work to be Performed under this agreement |
|---|---|
| McNabb Hydrogeologic Consulting, Inc. | Hydrogeology , drilling observation and evaluation |
| Holtz Consulting Engineers, Inc. | SRF Administration & Permitting |
| Gibbs Land Surveyors | Land Surveying (Post- Construction) |
| Nutting Engineers of Florida, Inc. | Geotechnical Engineering (Post-Construction) |
| | |
| | |
| | |
| | |

Also, provide resumes of individuals from these firms whom the Subcontractors shall utilize for completion of the construction.

Identify those subcontractors that are Minority/Women's Business Enterprises and repeat required information in "Minority/Woman Business Participation", below for said Subcontractors. (THIS REQUIREMENT FOR M/WBE INFORMATION IS VOLUNTARY)

## 8. BUSINESS SIZE AND CLASSIFICATION

**A. Size** (check one)

☐ Small
A domestic concern that normally employs less than 500 persons, or as defined by section 3 of the Small Business Act.

☒ Large
A domestic concern which, including domestic and foreign divisions and affiliates, normally employs 500 or more persons, is independently or publicly owned or controlled and operated and

which may be a division of another domestic or foreign concern.

**B. Classification** (check where applicable; may be more than one**)**

☐ Foreign:
A concern which is not incorporated in the United States or an unincorporated concern having its principal place of business outside the United States.

☐ Minority:
A business, at least 50% of which is owned by minority group members, or, in case of publicly owned businesses, at least 51% of the stock of which is owned by minority group members. For the purpose of this definition, minority group members are Black-Americans, Hispanic-Americans, American-Orientals, American-Indians, American-Eskimos, and American-Aleuts.
(THE REQUIREMENT FOR M/WBE INFORMATION IS VOLUNTARY)

☐ Women:
A business that is at least 51% owned and controlled by a woman or women.
(THE REQUIREMENT FOR M/WBE INFORMATION IS VOLUNTARY)

☐ Nonprofit:
A business or organization that has received nonprofit status under IRS Regulation 501C3.

☐ Sheltered:
A sheltered workshop or other equivalent business basically employing the handicapped.

Please indicate in the space below how your firm complies with the definitions selected above.

_____

_____

_____

_____

**9. PROFESSIONAL ENGINEER'S LICENSE:**

Respondent must hold a valid State of Florida Professional Engineer's License to be considered a qualified bidder.

State of Florida Professional Engineer's License No.: **CA2602**

Date: **Feb 28, 2021**

Primary Classification: **Certificate of Authorization**

## 10. QUALIFICATION FORM PREPARED BY:

Name (print or type): **Celia Earle, PhD**

Title: **Client Service Manager/Vice President**

Signature: 

Address: **1580 Sawgrass Corporate Parkway, Ste 400, Sunrise, FL 33323**

Telephone Number: **954.200.7615**

KPMG

# BROWN AND CALDWELL AND SUBSIDIARIES

## Consolidated Financial Statements

## September 28, 2018 and September 29, 2017

## (With Independent Auditors' Report Thereon)

The enclosed financial information for Brown and Caldwell and its subsidiaries for fiscal years 2017 and 2018 is provided to you by special request. Brown and Caldwell is a privately owned company. As such, this information should be held in strictest confidence. Copies should not be distributed to a third party or placed in a public document without prior consent from Brown and Caldwell senior management.

BROWN AND CALDWELL

Amy Fairbank

Amy Fairbank
Senior Vice President
Chief Financial Officer

KPMG LLP
Suite 1400
55 Second Street
San Francisco, CA 94105

# Independent Auditors' Report

The Shareholders and the Board of Directors
Brown and Caldwell:

We have audited the accompanying consolidated financial statements of Brown and Caldwell and its subsidiaries, which comprise the consolidated balance sheets as of September 28, 2018 and September 29, 2017, the related consolidated statements of comprehensive income, shareholders' equity, and cash flows for the years then ended, and the related notes to the consolidated financial statements.

## Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

## Auditors' Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

## Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Brown and Caldwell and its subsidiaries as of September 28, 2018 and September 29, 2017, and the results of their operations and their cash flows for the years then ended, in accordance with U.S. generally accepted accounting principles.

KPMG LLP

December 19, 2018

KPMG LLP is a Delaware limited liability partnership and the U.S. member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.

**BROWN AND CALDWELL AND SUBSIDIARIES**

Consolidated Balance Sheets

September 28, 2018 and September 29, 2017

| Assets | 2018 | 2017 |
|---|---|---|
| Current assets: | | |
| Cash and cash equivalents | $ 17,042,939 | 12,847,506 |
| Accounts receivable, net | 59,333,344 | 54,882,772 |
| Unbilled costs and accrued income | 44,289,747 | 43,029,365 |
| Other receivables | 1,393,597 | 1,655,493 |
| Prepaid expenses | 5,094,206 | 5,037,024 |
| Other current assets | 212,412 | 220,508 |
| Total current assets | 127,366,245 | 117,772,668 |
| Equipment, furniture, and fixtures: | | |
| Equipment | 26,175,097 | 25,787,536 |
| Furniture and fixtures | 9,869,211 | 8,790,774 |
| Leasehold improvements | 4,871,102 | 4,907,186 |
| Total equipment, furniture, and fixtures | 40,915,410 | 39,485,496 |
| Less accumulated depreciation | (30,254,229) | (31,491,542) |
| Equipment, furniture, and fixtures, net | 10,661,181 | 7,993,954 |
| Goodwill | 4,521,818 | 4,521,818 |
| Benefit plan related assets | 24,965,961 | 22,360,099 |
| Other long-term assets | 509,601 | 269,472 |
| Total assets | $ 168,024,806 | 152,918,011 |
| **Liabilities and Shareholders' Equity** | | |
| Current liabilities: | | |
| Accounts payable | $ 18,130,068 | 16,634,047 |
| Accrued liabilities | 41,032,517 | 37,925,308 |
| Deferred revenue | 7,462,747 | 8,890,991 |
| Current portion of long-term debt | 1,165,483 | 789,800 |
| Total current liabilities | 67,790,815 | 64,240,146 |
| Long-term debt | 1,330,133 | 1,857,900 |
| Deferred income taxes, net | 2,518,152 | 5,322,723 |
| Benefit plan related liabilities | 29,330,243 | 25,722,706 |
| Other liabilities | 2,871,029 | 2,828,251 |
| Total liabilities | 103,840,372 | 99,971,726 |
| Shareholders' equity: | | |
| Common stock, Class A, $0.25 par value. Authorized 4,000,000 shares; issued and outstanding 586,651 and 558,098 shares in 2018 and 2017, respectively | 136,224 | 129,913 |
| Common stock, Class B, $0.25 par value. Authorized 1,000,000 shares; issued and outstanding 35,680 and 37,958 shares in 2018 and 2017, respectively | 8,920 | 9,490 |
| Additional paid-in capital | 23,185,662 | 18,384,500 |
| Notes receivable for common stock issued | (1,203,201) | (1,141,838) |
| Retained earnings | 42,269,896 | 35,640,532 |
| Accumulated other comprehensive loss | (213,067) | (76,312) |
| Total shareholders' equity | 64,184,434 | 52,946,285 |
| Total liabilities and shareholders' equity | $ 168,024,806 | 152,918,011 |

See accompanying notes to consolidated financial statements.

**BROWN AND CALDWELL AND SUBSIDIARIES**

Consolidated Statements of Comprehensive Income

Years ended September 28, 2018 and September 29, 2017

| | 2018 | 2017 |
|---|---|---|
| Revenue from professional services | $ 395,215,672 | 367,404,239 |
| Costs and expenses: | | |
| Direct costs and expenses | 209,590,181 | 194,058,257 |
| Indirect costs and general and administrative expenses | 174,355,989 | 163,612,860 |
| Depreciation | 3,895,952 | 3,691,557 |
| Total costs and expenses | 387,842,122 | 361,362,674 |
| Income from professional services | 7,373,550 | 6,041,565 |
| Other (expense) income: | | |
| Interest income (expense), net | 30,567 | (38,953) |
| Equity in earnings of affiliates | 15,681 | 1,143,254 |
| Miscellaneous (expense) income | (197,852) | 56,320 |
| Other (expense) income, net | (151,604) | 1,160,621 |
| Income before income taxes | 7,221,946 | 7,202,186 |
| Income tax (benefit) expense | (2,100,806) | 1,888,468 |
| Net income | 9,322,752 | 5,313,718 |
| Other comprehensive (loss) income: | | |
| Foreign currency translation adjustments | 79,618 | (81,153) |
| Change in unrecognized obligations related to benefit plan related liabilities | (216,373) | 367,953 |
| Total other comprehensive (loss) income | (136,755) | 286,800 |
| Total comprehensive income | $ 9,185,997 | 5,600,518 |
| Weighted average shares outstanding: | | |
| Basic | 548,913 | 523,980 |
| Diluted | 571,682 | 552,241 |
| Net income per share: | | |
| Basic | $ 16.98 | 10.14 |
| Diluted | 16.31 | 9.62 |

See accompanying notes to consolidated financial statements.

Section 05

# Profile of Consultant

Section 5A

# Firm Profile

# Firm Profile

# 5A

## Industry-Leading Water and Wastewater Capabilities

### Since 1947, Brown and Caldwell has been at the forefront of innovation with one primary goal: providing safe and effective solutions.

Brown and Caldwell (BC) is a full-service, national environmental engineering and construction firm with 52 offices and 1,600+ professionals across North America and the Pacific. For more than 70 years, our creative solutions have helped municipalities, private industry, and government agencies successfully overcome their most challenging water and environmental obstacles. As an employee-owned company, BC is passionate about exceeding our clients' expectations and making a difference for our employees, our communities, and our environment.

With a principal focus on water and wastewater engineering, we have the resources to deliver your wastewater projects to meet your high standard of safety and your strategic vision. Our national reputation is based on exceptional client service and an unwavering commitment to quality.

Our team's resources, combined with our subconsultant team members, referred throughout as the BC Team or Team, are second to none. These individuals have worked on complex, multi-disciplined projects that include new technologies and innovative approaches to meet our clients' widely varied requirements. These innovations have received industry awards and accolades. We commit to delivering that same level of innovation and comprehensive approach to this project.

section overview

**This section describes the size, location and capabilities of the firm.**

**Selection Criteria**

- ✓ Current and Projected Workload and Time Schedule to Complete Project
- ✓ Principal Location

**We have included local subconsultants on our team who are familiar, experienced and bring specialty skills, expertise and complementary capabilities to round out our offerings to the City for this project. More information about our team members can be found in Section 5C, Project Team.**

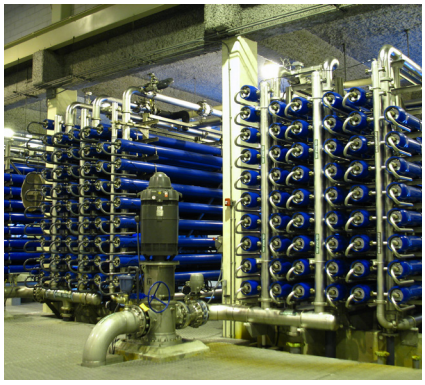
MHC

HCE Holtz Consulting Engineers, In

GIBBS LAND SURVEYORS
2131 HOLLYWOOD BOULEVARD, SUITE 204
HOLLYWOOD, FL 33020 (954) 923-7666
LICENSED BUSINESS NO. 7018

Nutting Engineers of Florida Inc. | Established 1967
Your Project is Our Commitment

# Proven Partnership. Trusted Solutions.



## BC is a Proven Partner to the City of Hollywood

BC's project leadership team has supported the City's diverse engineering needs over many years in a general consulting capacity. Our goal is to be an extension of your staff and strive to consistently demonstrate our commitment to the best long-term interest of the City of Hollywood. In this capacity, we view your utility from your perspective, but with the additional benefit of a broader portfolio of situations derived from other local and national experiences to be able to help you effectively anticipate and respond to both opportunities and risk.

Over the years that BC has served the City, we have proven ourselves to be a Trusted Partner of Hollywood in diverse situations. The impact of our contributions over the last 20 years is highlighted by the deep injection well capacity expansion about to be implemented:

1. BC recognized potential risks of a Reuse Compliance Plan that relied on Floridan Aquifer recharge and led the initiative to develop an alternative strategy (new Compliance Plan) that mitigated the risks at an estimated savings of more than $200 million.

2. BC's new Compliance Plan additionally laid the foundation for a deep injection well capacity expansion approach that would rely on the use of industrial Class 1 wells thereby eliminating the need for costly high-level disinfection (HLD). This was achieved by creatively integrating the City's water treatment concentrate disposal needs, thereby reclassifying the effluent as a non-hazardous industrial waste.

3. We worked collaboratively with FDEP throughout the permitting process to address all requirements and successfully secured a permit to construct two industrial Class 1 wells (No. 3 and No. 4) and one monitoring well, which realized an additional $70 million cost savings by avoiding HLD costs.

4. Other related Ocean Outfall Legislation (OOL) compliance initiatives include facilitated development of a cost-effective contracted reuse program with a neighboring utility. With our assistance, Hollywood is the only utility impacted by the OOL to have FDEP determine that approximately 50% of its reuse compliance mandated, additionally received reuse compliance credit for historical in-plant process water use.

In addition to these impacts related to the injection well expansion program, we are similarly proud of the impact of our Team on smaller, but significant projects including delivery of a major neighborhood water main replacement project with no change orders, planning for and expansion of your water treatment system, and responding to urgent calls for technical support with timely and impactful solutions.

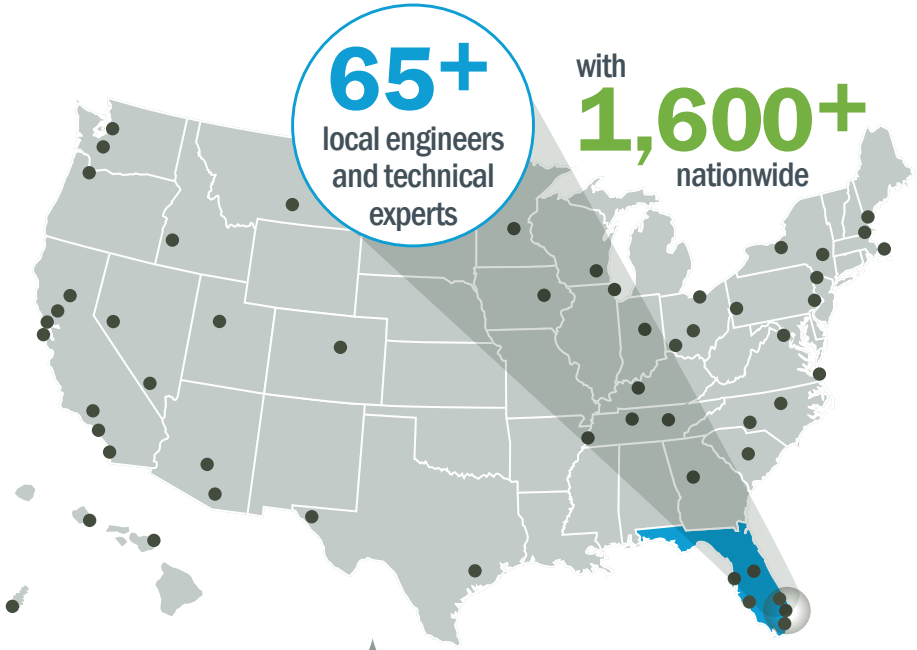
Experience + Flexibility + Trust + Commitment
**= Outstanding Results**

# Location of the Office Where Work Will be Performed

## Managing the City's contract from our local office enables us to leverage our well-respected technical resources that have provided more than 25 years of service to local clients/utilities; strong regulatory stakeholder relationships; and a Team that can efficiently support the project and provide the maximum level of responsiveness.

Service delivery for this project will be managed out of our Broward County office located at 1580 Sawgrass Corporate parkway, Suite 400, Sunrise, FL 33323 under the leadership of Client Service Manager, Dr. Celia Earle, and our local supporting team. The Project Manager and Engineer of Record, Nigel Grace, is also located in that office. We have organized our team to be nimble and responsive to the City's needs. BC has three local offices in Broward County, Miami-Dade County, and Palm Beach County that collectively support our South Florida operations; they work seamlessly as one office. Our Broward County and Miami-Dade County offices are both approximately 20 minutes away from the City of Hollywood Department of Public Utilities Administration building. Nigel will be supported by local team members that have the experience and track record to successfully execute this project. **Nigel Grace is the main point of contact, but BC also offers a second point of contact, Dr. Celia Earle, so that responses to your contact will always be made in a timely manner.** Nigel has been a Broward County resident for over 30 years and has worked for the City of Hollywood for over 20 years on a variety of complex engineering projects while employed at BC and another firm.

In addition to the South Florida offices, BC has three additional Florida offices covering all the disciplines needed for this project. Beyond these local and regional resources, the City of Hollywood will have access to BC's deep bench of technical expertise nationwide, as well as additional resources to be sure every milestone is met and the project is completed on time.




**70** Years in Business

**100%** Water / Environmental

**4** Industry Leader Awards
*National Safety Council*

BC's safety metrics are consistently lower than the industry average.

# Current and Projected Workload

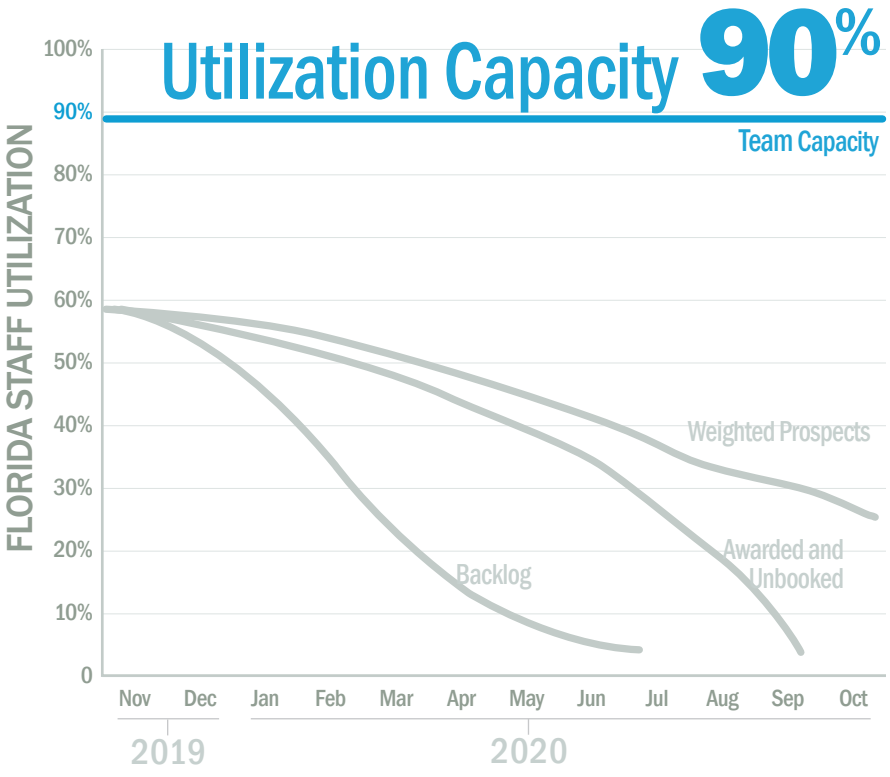
## The BC Team is fully committed to delivering success for this project.

As discussed below in the summary of BC's volume of work with the City of Hollywood over the past five years, we have been consistently working with the City to develop its Ocean Outfall Legislation (OOL) Compliance Program, of which this project is a major component. During that period, we worked with the City to gain FDEP's support and approval of the City's overall program, successfully permitted the proposed injection and monitoring wells, and completed the design of the proposed project.

The proof of our commitment is evidenced by our past unwavering support. The team that has consistently supported the diverse related efforts over the past few years is fully committed to seeing this through to completion. This commitment starts with our project leadership core team of **Nigel Grace, PE** (Project Manager and Engineer of Record) and **David McNabb, PG** (Lead Hydrogeologist and Hydrogeologist of Record) and is fully embraced by the supporting cast of professionals who will be involved in critical elements ranging from overseeing well drilling activities to providing State Revolving Fund (SRF) loan administrative support.

In assembling the full BC Team, we carefully considered current and projected workload, as well as the right fit for the needs of this project. As part of the BC Team development, each team member's workload was carefully reviewed to ensure availability commensurate with anticipated level of engagement and commitment for the duration of this project. For example, field hydrogeologists who will be involved in well drilling observation are exclusively committed to this project and staffed to an adequate degree to provide relief support during sustained drilling activities. Other less demanding commitments will be available on a prioritized basis subject to the project-specific needs that will emerge over the implementation. A detailed project implementation schedule is presented in Section 5D, Project Approach, that highlights the coordinated implementation of the Contractor's work and that of the BC Team for the duration of construction, continuing through the completion of Operational Testing and, ultimately, Operational Permit issuance from the FDEP.

Our team is further supported by national resources that total over 1,600 professionals that we may draw upon as special needs emerge. Within the state of Florida, the Projected Florida Staff Utilization Graph, shown below, shows BC's overall availability as a function of time. Our anticipated workload (i.e. backlog of authorized projects) is the lowest line of the three.




The BC Team proposed for this project maximizes the use of locally available staff. Key field staff are 100% committed to your project for the duration of construction. Additionally, BC has over 1,600 personnel on staff that can augment our local team as needed in the event of unforeseen circumstances. This graphic highlights BC's other Florida staff (i.e. backlog) for one year after the contract NTP (November 2019).

# Volume of Work with the City

## BC's volume of work is the perfect balance demonstrating depth of experience and availability for this project.

Over the last five years, BC has worked on a total of nine projects for the City with a combined fee of $1,468,866. While our volume of work is relatively modest, the impact of our efforts has been substantial and unrivaled among the City's engineering consultants. Our volume of work provides a history of the development of the current deep injection well (IW) project and the significant milestones achieved in arriving at the current project that represents the cornerstone of the City's Ocean Outfall Legislation (OOL) Compliance Program. Our key team member, McNabb Hydrogeological Consulting, played a role in a number of important assignments culminating in the permitting and design of the proposed injection wells and monitoring well.

Highlights of select projects provided in the table below underscore the impact and advantages offered by BC for the City's OOL Compliance Program, of which the proposed assignment is a component.

BC offers an unparalleled amount of continuity, stakeholder trust, knowledge of project design requirements, and line of sight vision of the entire scope of the City's OOL compliance program. Our history and momentum best positions us to be entrusted with completing this project, while eliminating learning curve delays and the potential for coordination challenges that can emerge with a third-party team that has had no involvement during project development phases.

**TABLE 5A-1. BC's volume of work awarded by the City in the last five years.**

| Project | Date | Fee | Description/Relevance | Benefits |
|---|---|---|---|---|
| Coastal I/I Mitigation | 2014 | $24,500 | Assessed and quantified impact of brackish groundwater on effluent quality | First step in building the case that OOL mandated reuse would place an undue burden on Hollywood |
| Impact of Groundwater Chlorides on Effluent Quality | 2014 | $54,570 | Confirmed impacts with sampling and developed initial alternative OOL reuse compliance strategies | Initiated progressive engagement with FDEP that ultimately led to over $200 million savings in reuse compliance cost |
| Backup Concentrate Disposal Plan | 2016 | $42,694 | Developed integrated concentrate and effluent disposal strategy, and laid foundation for Injection Well permitting | Justified the elimination of High-Level Disinfection (HLD) at an estimated cost savings of $70 million |
| As-Needed Services | 2015 | $100,000 | Advocate City's concerns re reuse compliance impacts; active/regular engagement with FDEP | Building credibility and support with FDEP; develop and refine key elements of compliance plan |
| As-Needed Services | 2016 | $100,000 | Active FDEP engagement, assess contracted reuse opportunities | FDEP approval of new Compliance Plan that incorporated diverse practical approaches for $200 million savings |
| Water Main Replacement Project (Between Johnson St. and Hollywood Blvd.) | 2016 | $692,643 | Design, permitting, bidding, and construction services for the replacement of approximately 60,500 linear feet of water mains | Replacing aging infrastructure |
| Water Main Replacement Project (Between Sheridan St. and Taft St.) | 2017 | $213,459 | Design and construction management for water distribution system improvements | Replacing aging infrastructure |
| As-Needed Services | 2018 | $100,000 | Initiated Underground Injection Control (UIC) permit (FDEP) for two industrial class IWs that would allow for elimination of HLD; operational integration of concentrate was an important element | Received permit approval of industrial IWs; FDEP buy-in to overall integrated approach to fluid residuals disposal; $70 million cost savings compared to typical approach |
| As-Needed Services | 2019 | $100,000 | Prepared bid documents for proposed Injection Wells (IW) and Monitoring Well (MW); supported development of Contracted Reuse agreement with City of Miramar | Efficient development of construction bid documents; partial fulfillment of reuse requirement |

# Current and Projected Florida Projects

## The table below shows the projects handled by BC's Florida offices including project name, client, and anticipated completion date.

| Project Name | Client | Anticipated Completion |
|---|---|---|
| AMI Assessment | Broward Co Water & Wastewater Serv | 08/31/19 |
| AWIA Gap Analysis | Broward Co Water & Wastewater Serv | 08/30/19 |
| AWS Conceptual Master Plan Update | Broward Co Water & Wastewater Serv | 09/09/19 |
| Broward Co Reuse Plant Expan.2018 | Broward Co Water & Wastewater Serv | 05/29/20 |
| 2018 Annual Report | Broward Co Water & Wastewater Serv | 08/30/19 |
| Lakes Eva & Henry Restoration Study | City of Haines City | 06/30/20 |
| TO1 Water Utility Feasibility | City of Parkland | 10/30/19 |
| MSWRF Aereation Gate Replacement | Clearwater, City of (FL) | 10/29/19 |
| Misc Engineering Services 2018 | Clearwater, City of (FL) | 12/31/19 |
| Marshall St. ATS Design & Bidding | Clearwater, City of (FL) | 12/31/19 |
| NE and MSWRF Tank Leak Repair | Clearwater, City of (FL) | 12/23/19 |
| ECR Headworks Construction Services | East Central Regional Wastewater Tr | 10/31/19 |
| Electrical Improvements Proj Design | East Central Regional Wastewater Tr | 11/30/09 |
| WA 4 ECR Process Water Alternate | East Central Regional Wastewater Tr | 05/15/20 |
| ECR Biosolids Owner Rep Support | East Central Regional Wastewater Tr | 12/31/19 |
| Site Investigations for CD LF Exp | Hernando, Cnty of, Waste Mgmt (FL) | 09/30/19 |
| CD Landfill Expansion Design | Hernando, Cnty of, Waste Mgmt (FL) | 06/30/20 |
| Class I, Cell 4 Landfill Design | Hernando, Cnty of, Waste Mgmt (FL) | 12/30/19 |
| Horiz. LFG Collection CM Services | Hernando, Cnty of, Waste Mgmt (FL) | 10/31/19 |
| 2019 Class I LF Capacity Report | Hernando, Cnty of, Waste Mgmt (FL) | 09/30/19 |
| NWWRF Biosolids to Energy Study | Hillsborough, County Water Dpt (FL) | 06/30/19 |
| Falkenburg WWTP Bar Screen - Design | Hillsborough, County Water Dpt (FL) | 06/26/20 |
| NHARP Aquifer Recharge Booster PS | Hillsborough, County Water Dpt (FL) | 07/31/20 |
| Water Main Design and CMS | Hollywood, City of (FL) | 08/19/19 |
| Water Main Replacement 3 | Hollywood, City of (FL) | 12/27/19 |
| Prof. Engineering Admin Svcs.3 | Hollywood, City of (FL) | 12/31/19 |
| Largo Wet Weather Monit. & Pump Sys | Largo, City of (FL) | 10/15/19 |
| As Needed Water Hydraulic Modeling | Largo, City of (FL) | 12/15/19 |
| SWWRF Belt Filter Press Improvement | Manatee, County of (FL) | 08/23/20 |
| North WRF BFP Improvements | Manatee, County of (FL) | 02/28/20 |
| NDWWTP Chlorine and Toxicity Study | Miami-Dade, Cnty Water & Sewer (FL) | 08/31/19 |
| NDWWTP Disinfection System Restart | Miami-Dade, Cnty Water & Sewer (FL) | 09/25/20 |
| OOL-CDWWTP Upgrades | Miami-Dade, Cnty Water & Sewer (FL) | 02/06/20 |
| PSIP - PS 440 (Phase 2) | Miami-Dade, Cnty Water & Sewer (FL) | 12/31/19 |
| PSIP PS 672 | Miami-Dade, Cnty Water & Sewer (FL) | 10/30/19 |
| PSIP PS 336 | Miami-Dade, Cnty Water & Sewer (FL) | 10/30/19 |

| Project Name | Client | Anticipated Completion |
|---|---|---|
| PSIP - PS 1026 | Miami-Dade, Cnty Water & Sewer (FL) | 12/31/19 |
| PSIP - PS 1065 | Miami-Dade, Cnty Water & Sewer (FL) | 12/30/19 |
| PSIP PS 596 | Miami-Dade, Cnty Water & Sewer (FL) | 12/31/19 |
| Reuse Compliance Assistance (TA 1) | Miami-Dade, Cnty Water & Sewer (FL) | 08/30/19 |
| NDWWTP Effluent PS Electrical BODR | Miami-Dade, Cnty Water & Sewer (FL) | 02/29/20 |
| OOL-SDWWTP Upgrades | Miami-Dade, Cnty Water & Sewer (FL) | 12/31/20 |
| ND O2 Trains and Production BODR | Miami-Dade, Cnty Water & Sewer (FL) | 09/30/19 |
| East WTP Improvements Support | Miramar, City of (FL) | 12/30/19 |
| Three Mile Upgrade Design Support | Mobile Area Water and Sewer System | 12/30/19 |
| Pre Rev NMB CNCRTC Water OM and PMS | North Miami Beach, City of (FL) | 09/30/19 |
| OC-TA 33 Force Main 3 | Orange County Utilities Dept (FL) | 12/31/19 |
| OC DB Cmp Phase II Project III | Orange County Utilities Dept (FL) | 11/30/19 |
| OC TA 16 Gravity 11-20 | Orange County Utilities Dept (FL) | 02/28/20 |
| OC-TA 010 Gravity 6 | Orange County Utilities Dept (FL) | 07/01/20 |
| Gravity Project 7 | Orange County Utilities Dept (FL) | 02/01/20 |
| OC-TA 015 On-Site Dev Engr Svcs Sp | Orange County Utilities Dept (FL) | 08/31/19 |
| OC-TA 029 Standards Manual Update | Orange County Utilities Dept (FL) | 10/31/19 |
| OC-TA-30-Berry Dease FM Inspection | Orange County Utilities Dept (FL) | 07/31/19 |
| OC - TA 31 Pump Station Preliminary | Orange County Utilities Dept (FL) | 12/16/19 |
| Maximo Impl Assist | Orange County Utilities Dept (FL) | 09/25/19 |
| OC-TA 034 Radio Study | Orange County Utilities Dept (FL) | 09/30/19 |
| OC TA 39_CMOM EMS Assistance 2018 | Orange County Utilities Dept (FL) | 03/31/20 |
| TRAK Capital Improvement | Orange County Utilities Dept (FL) | 08/30/19 |
| OC-TA38 -TV Data Tool Support | Orange County Utilities Dept (FL) | 09/30/19 |
| RFP Assistance | Orange County Utilities Dept (FL) | 08/28/19 |
| OC TA-41 Water MOS Dashboard | Orange County Utilities Dept (FL) | 12/30/19 |
| FS Div Engineering Support Staff | Orange County Utilities Dept (FL) | 11/30/19 |
| OC -TA 43 PS Prelim. Engineering 2 | Orange County Utilities Dept (FL) | 08/31/19 |
| Collection Sys. Odor and Corrosion | Orange County Utilities Dept (FL) | 09/30/19 |
| OC TA 46_MLI FMEA Assistance | Orange County Utilities Dept (FL) | 12/31/19 |
| OC-TA 48 SWAP LMS Assistance | Orange County Utilities Dept (FL) | 12/20/19 |
| OC TA45 Project Management 2019 | Orange County Utilities Dept (FL) | 12/30/19 |
| Forensic Analysis Support | Orange County Utilities Dept (FL) | 11/30/19 |
| SWA WCCTS Push Wall Improvements | Palm Beach Cnty Solid Waste (SWA) | 09/30/19 |
| Reclaimed Pipeline, Storage and PS | Palm Beach Cnty, Wtr Util Dept (FL) | 08/30/19 |
| Reclaimed Water Master Plan | Palm Beach Cnty, Wtr Util Dept (FL) | 10/31/19 |
| SRWRF Blower Capacity Replacement | Palm Beach Cnty, Wtr Util Dept (FL) | 09/30/19 |
| Dunn WRF Pond Line Assess Phase 1 | Pinellas, County of (FL) | 12/30/19 |
| McMullen SR580 Water Main Design | Pinellas, County of (FL) | 09/26/19 |
| Dunn Internal Circ Pump Replacement | Pinellas, County of (FL) | 12/30/20 |

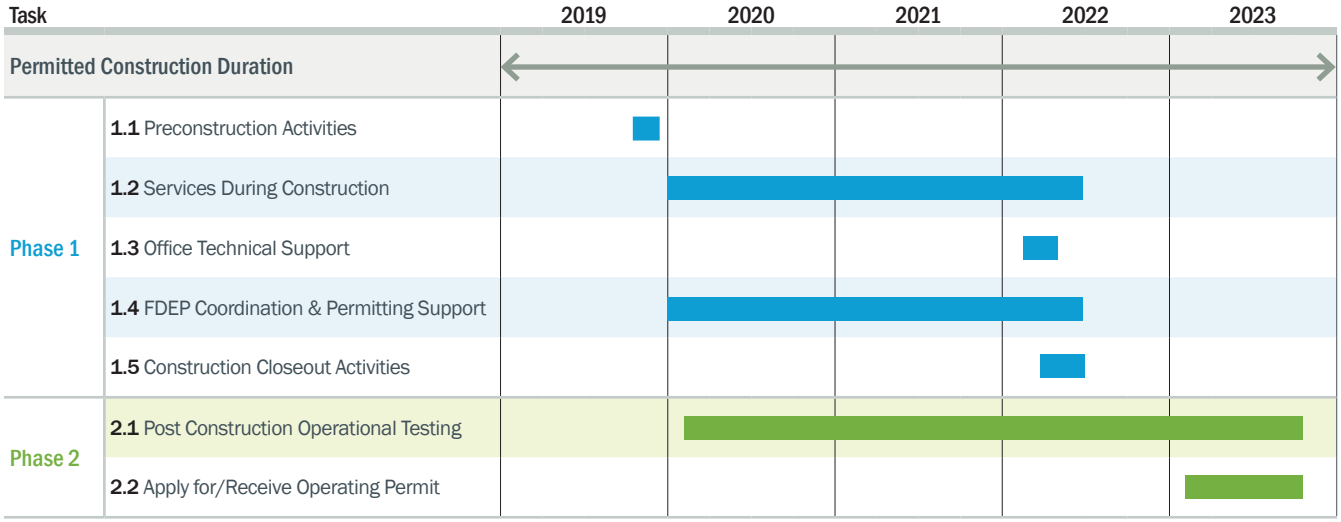
| Project Name | Client | Anticipated Completion |
|---|---|---|
| Sewer Lining Construction Project | Pinellas, County of (FL) | 06/26/20 |
| Aerial Pipe Inspection Plan | Pinellas, County of (FL) | 11/21/19 |
| SCB WRF Lighting Improvements | Pinellas, County of (FL) | 02/20/20 |
| So. Svc Area Material Recovery Fac | Reedy Creek Improvement District | 10/31/19 |
| Work Authorization No. 1 | Riviera Beach Utility Special District | 08/31/19 |
| WA3 WTP Fac. Planning and Chem Sys. | Riviera Beach Utility Special District | 09/26/19 |
| North Water Tower Park LID Design | Sarasota, County of (FL) | 08/20/19 |
| 47th Street Drainage Improvements | Sarasota, County of (FL) | 10/17/19 |
| Reclaimed Water Main Interconnect | Sarasota, County of (FL) | 09/30/19 |
| Turtle Rock McIntosh RCW Transfer | Sarasota, County of (FL) | 06/02/20 |
| Palm Plaza Force Main Improvements | Sarasota, County of (FL) | 05/05/20 |
| Final WTP Expansion DESIGN | Seminole Tribe of Florida | 10/18/19 |
| C-44 Reservoir-STA S- 401 PS CMS | South Florida Water Management Dist | 08/30/19 |
| PS S-5A Repowering and Autom EDC | South Florida Water Management Dist | 12/31/21 |
| A2 STA Preliminary Design | South Florida Water Management Dist | 06/01/20 |
| C-43 CMS Services | South Florida Water Management Dist | 05/13/22 |
| SFWMD Statewide Model Mgmt System | South Florida Water Management Dist | 10/30/19 |
| Ch D-Charlie Cr SEFA Analysis | Southwest Florida Water Mgmt Dist | 09/30/19 |
| Ch D-Horse Cr SEFA Analysis | Southwest Florida Water Mgmt Dist | 08/30/19 |
| Ch D WAP Assessments | Southwest Florida Water Mgmt Dist | 08/01/19 |
| Ch D-Withlacoochee SEFA-Woody Hab | Southwest Florida Water Mgmt Dist | 09/30/19 |
| St Pete Biosolids Construction Ph | St. Petersburg, City of (FL) | 11/30/19 |
| SWWRF Capacity Expansion | St. Petersburg, City of (FL) | 12/01/19 |
| Wet Weather Improvement Plan | St. Petersburg, City of (FL) | 08/15/19 |
| Sawgrass HLD– Phase 1_CMS | Sunrise, City of (FL) | 09/30/19 |
| Springtree WWTP Headworks Design | Sunrise, City of (FL) | 08/31/19 |
| Sawgrass WWTP Train A Design | Sunrise, City of (FL) | 01/27/20 |
| LS 117 and 307 CA Svcs | Sunrise, City of (FL) | 08/01/19 |
| LS 114, 123, 125, 132, 148 CA Svcs. | Sunrise, City of (FL) | 11/29/19 |
| Sunrise Water Use Permit2018 Update | Sunrise, City of (FL) | 09/30/19 |
| 2018 Asset Management Services | Tampa Bay Water | 09/30/19 |
| Anaerobic Treatment for Wastewater | Water Environment & Reuse Foundation | 10/15/19 |
| LS53 Rehabilitation CAS | West Palm Beach, City of (FL) | 08/13/19 |
| Merrill Ave. 10-Inch FM Reroute | West Palm Beach, City of (FL) | 08/30/19 |
| Water Supply Planning Support | Withlacoochee Regional Water Supply | 09/30/19 |

# Time Schedule to Complete Project

## We have prepared a detailed schedule that will meet all the project objectives.

We have prepared a detailed implementation schedule that captures important implementation requirements from notice to proceed to receipt of FDEP Operating Permit. The scheduling details are anchored in our unparalleled understanding of the project requirements, implementation constraints, alignment with other related work and Team experience overseeing the successful implementation of several deep injection well projects.

Section 5D, Project Approach contains full details of our proposed project schedule. There are many complex factors associated with this project. Our schedule considers the potential challenges as well as some areas where time savings could result.




## Proven Partnership. Trusted Solutions.

### Fast Track Wastewater Improvements Design - *Two months from beginning to end!*

**BC was called upon by the City of St. Petersburg to implement on a fast track basis, the design of critical process improvements to provide expanded wastewater treatment capacity. BC established a firm record when the design of the $10 million improvements were completed in two months! This highlights the resourcefulness and capacity of our firm to quickly mobilize to achieve even the seemingly impossible task. This is just one of a number of examples where we have risen to meet the urgent needs of our clients to significantly compress schedule. In light of this and other experiences, the BC team has the local capacity and experience to effectively manage our delivery effort to meet virtually any schedule required to meet the critical deadlines faced by our clients.**

Section 5B

# Project Experience



# Project Experience

# 5B

## Delivery and Performance You Can Count On

**Our Team was assembled five years ago for the specific purpose of supporting the City of Hollywood's efforts to navigate through the major compliance challenge of the Ocean Outfall Legislation (OOL). Many significant accomplishments have been achieved to date that have accrued cost savings totaling hundreds of millions. This next step is a work in progress. The team that has successfully supported your interests thus far will continue to deliver unrivaled value in supporting the City's best interest.**

Building on the experience (summarized below) of key members of the Brown and Caldwell (BC) leadership team that dates back to the mid to late 1990's, we kicked off an initiative to develop a backup concentrate disposal strategy for the City as an extension of water system master planning efforts that had been completed almost 10 years previously. That initiative was foundational to the development and realization of the opportunity to implement the cost-effective, integrated, expanded, effluent disposal system that was successfully permitted in January 2019.

At the time the initial study was conducted, BC partnered with McNabb Hydrogeologic Consultants, to tap into their specialized expertise and stakeholder credibility with the permitting, design and implementation oversight of deep injection well systems. Together, our Team has permitted and designed the proposed industrial class deep injection wells and stand ready to continue our momentum through the implementation phase.

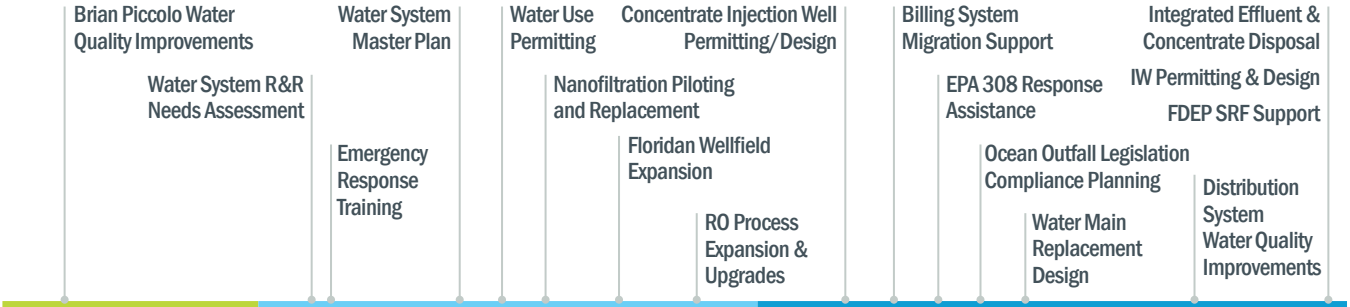
section overview

**This section includes a list and description of similar projects, as well as our litigation information within the past five years.**

### Selection Criteria

- ✓ Expertise of Designated Staff
- ✓ Previous Performance on Related Projects
- ✓ Ability to Complete Project on Time
- ✓ Ability to Complete Project on Budget

## Unparalleled Impact of the BC Team on Hollywood's Utility Program




**Benefits:**

- Improved Reliability & Performance

**Benefits:**

- Practical Innovation
- Diversified Water Supply
- Improved Reliability & Efficiency

**Benefits:**

- $200 million Cost Savings in Reuse Program
- Underground Injection Control (UIC) Permit
- High Level Disinfection (HLD) Avoidance Potential
- Low Cost Contracted Reuse Program

Successful implementation of the proposed work requires diverse expertise in the areas of well drilling oversight, FDEP permitting engagement, construction contract administration, coordination of temporary piping improvements with plant operations, and FDEP SRF loan administration support. Furthermore, the inclusion of performing post-construction operational testing will require supplemental wellhead and piping improvements that will be incorporated into the future permanent system. In support of this effort, we have assembled a list of projects that highlight the experience of our Team in all pertinent areas.

- Well Drilling Oversight (20 injection well projects recently implemented on time & on budget)
- Construction Contract Administration (diverse projects in plant environment)
- SRF Loan Administration (specialized extensive expertise)
- Design of Plant/Piping Systems (to support operational testing phase)

### A Proven Partner in Florida Operations

Since 2009, BC has served as one of the City's infrastructure consultants. In this role, we have worked side-by-side with you to advance the City's interests in several important areas. Not only did we successfully implement a major water main replacement project with no change orders, we undertook several wide-ranging initiatives that include reclaimed water compliance assistance, integrated planning of effluent and concentrate residuals disposal requirements, and distribution system water quality improvements.

# Relevant Project Experience

## The BC Team possesses exceptional experience for this project as demonstrated by the project examples on the following pages.

### Recent and relevant municipal experience

With a solid track record of delivering water, wastewater, reclaimed water and water resource projects in Florida and throughout the U.S., we understand the challenges that public works and utilities are facing as they comply with regulations; address population growth and impacts of climate change; and grapple with aging infrastructure.

BC has a comprehensive resume of in-house services that we can offer to the City. On the following pages, we have included featured projects within the last five years that demonstrate our Team's expertise in areas related to the scope of services. Projects highlighted on the following pages include the following categories:

1. **Injection and Monitoring Wells Permitting, Design and Construction Oversight**– demonstrates unsurpassed well drilling oversight capabilities and performance
   a. 10 projects, including the construction of five deep injection wells within the past five years
   b. All projects completed within schedule and budget
   c. Consistent and proven team of hydrogeologists committed to Hollywood
2. **General Construction Administration Capabilities** – demonstrates the ability to manage large complex multi-disciplinary construction projects in a wastewater treatment plant environment
   a. Dozens of recent projects in South Florida with construction values ranging from $2 million to almost $100 million
   b. Major plant improvements including piping tie-ins that require operational coordination and continuity
3. **Plant Design Capabilities** – demonstrates proven capabilities to design major plant systems including piping, pumping and disciplines that are pertinent to the design of system elements required to support operational testing
   a. Proven design, permitting and construction administration capabilities
4. **FDEP SRF Loan Administration** – decades of specialized experience with loan and grant administration is provided through our subconsultant Holtz Consulting Engineers, Inc.

| Project Name | Southern Regional Wastewater Treatment Plant Deep Injection Wells No. 3 and No. 4 | Turkey Point Injection Well System | Okeechobee Clean Energy Center Injection Well System |
|---|---|---|---|
| Location | **Hollywood, Florida** | **Homestead, Florida** | **Juno Beach, Florida** |
| Description of the Project, including size and scope | Brown and Caldwell working together with McNabb Hydrogeologic Consulting, Inc. (MHC) provided planning, design and permitting services for deep injection wells IW-3 and IW-4 and associated dual-zone monitor well MW-2 at the Hollywood Southern Regional Wastewater Treatment Plant. The deep injection well design includes 36-inch diameter final steel casing with a 24-inch diameter fiberglass reinforced plastic (FRP) liner and a proposed depth of 3,500 feet. When completed, each deep injection well will have a permitted capacity of 19.92 million gallons per day (mgd). The deep injection wells were designed as Class I Industrial injection wells to allow co-disposal of treated wastewater and reverse-osmosis concentrate. This allowed the City to avoid extremely costly plant upgrades to bring the treatment level of the effluent to reclaimed water standards. The project which included the design of temporary piping required for short-term injection testing as well as bid phase support services was completed 2 months ahead of the anticipated 1-year duration.<br>The BC Team provided timely and appropriate responses to a total of four Requests for Additional Information (RAI) received (three RAIs were associated with the FDEP SRF loan application review).<br>Key Staff: Nigel Grace, David McNabb, Diego Herrera, Celia Earle | McNabb Hydrogeologic Consulting, Inc. (MHC) and Holtz Consulting Engineers, Inc. (HCE) provided design, permitting and construction administration services for the Florida Power & Light Turkey Point Power Plant Class I Industrial deep injection well system. The project included construction of a 24-inch diameter final casing, 3,230-foot-deep injection well with an 18-inch diameter fiberglass reinforced plastic (FRP) liner and associated dual-zone monitor well. The injection well was originally permitted as an exploratory well which was then converted to a Class I injection well. The project subsequently included re-rating the injection well to accept 15.59 million gallons per day (mgd) of non-hazardous industrial wastewater and obtaining an FDEP operating permit for the injection well system. The project was staffed on a 24-hour a day, 7 days a week basis throughout the construction of the injection well system in accordance with the client's requirements.<br>Key Staff: David McNabb, Sally Durall, David Holtz, Curtis Robinson | McNabb Hydrogeologic Consulting, Inc. (MHC) and Holtz Consulting Engineers, Inc. (HCE) provided design, permitting and construction administration services for the Florida Power & Light Okeechobee Clean Energy Center Power Plant Class I Industrial deep injection well system. The project included construction of one 24-inch diameter exploratory well that was subsequently converted to a Class I industrial injection well, one 24-inch diameter final casing, 3,200-foot-deep injection well with an 18-inch diameter fiberglass reinforced plastic (FRP) liner and associated dual-zone monitor well. The injection wells have a permitted injection capacity of 9.65 million gallons per day (mgd) of non-hazardous industrial wastewater. The team saved the client significant capital funds by staffing the project on an average of 12-hours a day, 7 days a week rather than 24-hours a day, 7 days a week as was originally proposed by the client.<br>Key Staff: David McNabb, Sally Durall, Curtis Robinson, Harrison Barron |
| Relevant Categories | Injection and Monitoring Wells Permitting, Design and Construction Oversight, FDEP SRF Loan Administration | Injection and Monitoring Wells Permitting, Design and Construction Oversight, FDEP SRF Loan Administration | Injection and Monitoring Wells Permitting, Design and Construction Oversight |
| Client, including address, phone number and contact person | City of Hollywood<br>1621 North 14th Avenue<br>Hollywood, Florida 33022<br>Clece Aurelus \| 954.967.4455 | Florida Power & Light<br>9760 SW 344th Street<br>Homestead, FL 33035<br>Sara Mechtensimer \| 561.694.4997 | Florida Power & Light<br>700 Universe Boulevard<br>Juno Beach, Florida 33408<br>Rich Merrill \| 772.774.2319 |
| Original Schedule and Scope | Not applicable – the work was not performed as a stand alone project but under an as-needed services task order | 512 days - Design, permitting and construction administration services including on-site representation | 994 days - Design, permitting and construction administration services including on-site representation |
| Achieved Schedule and Scope | While a defined project schedule was not established, the project progressed in a timely manner and all objectives (primarily elimination of HLD) were achieved | 512 days, Complete August 2016 - Design, permitting and construction administration services including on-site representation | 559 days, Complete June 2018 - Design, permitting and construction administration services including on-site representation |
| Number of Change Orders or Amendments | None | None | One change order was requested by the client for construction of shallow monitor wells that were not associated with the injection well system |
| Average Turnaround Time for RFI and Submittal Approvals | Turnaround time for FDEP Permit RAI - 7 days<br>FDEP SRF RAIs – RAI#1 (30 days); RAIs #2/3 (less than 7 days) | Average Turnaround time for RFIs - 5 business days<br>Average Turnaround time for Submittals - 5 business days | Average Turnaround time for RFIs - 7 business days<br>Average Turnaround time for Submittals - 3 business days |
| Cost of Project - Initial Cost Estimate | Not a standalone project but was completed as part of a $100,000 as-needed service project that included multiple unrelated assignments | $7,850,000 | $10,500,000 |
| Cost of Project - Actual Cost | Completed within as-needed services authorization | Client mandated confidential (completed under budget) | Client mandated confidential (completed under budget) |
| Point of Contact | Clece Aurelus \| 954.967.4455 | Sara Mechtensimer \| 561.694.4997 | Rich Merrill \| 772-774-2319 |

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| Project Name | West County Energy Center Injection Well System | Water Distribution Improvements State Revolving Funding | Okeechobee Utilities Authority Well System |
|---|---|---|---|
| Location | **Loxahatchee, Florida** | **Stuart, Florida** | **Okeechobee, Florida** |
| Description of the Project, including size and scope | McNabb Hydrogeologic Consulting, Inc. (MHC) and Holtz Consulting Engineers, Inc. (HCE) provided design, permitting and construction administration services for the Florida Power & Light West County Energy Center Power Plant Class I Industrial deep injection well system. The project included construction of two 20-inch diameter final casing, 3,400-foot-deep injection wells with a 16-inch diameter fiberglass reinforced plastic (FRP) liner and associated dual-zone monitor well. The project also included obtaining an FDEP operating permit for the injection well system. The injection wells have a permitted injection capacity of 7.29 million gallons per day (mgd) of non-hazardous industrial wastewater. The team subsequently obtained an operating permit for the injection well system. Significant capital funds for the project were saved by staffing the project on an average of 12-hours a day, 7 days a week rather than 24-hours a day, 7 days a week as was originally proposed by the client.<br>Key Staff: David McNabb, Sally Durall, David Holtz | The project included design, permitting, and construction of approximately 59,000 linear feet (lf) of 6-inch through 12-inch water mains in existing residential neighborhoods and commercial developments for the City of Stuart. The new mains replace inadequately sized mains, looped dead ends, old mains, and increase fire protection for the City. The mains are located in City, County, and Florida Department of Transportation right-of-ways. Holtz Consulting Engineers (HCE) assisted the City with obtaining a $6-million-dollar Drinking Water State Revolving Fund (SRF) loan for this project. Work included preparing and submitting the Request for Inclusion (RFI), Water Facilities Plan, holding the public meeting, assistance with the loan application, loan agreement and business plans, and construction phase SRF compliance activities during construction including working with the Contractor to ensure all applicable materials comply with the provisions of the "American Iron and Steel" act, review and approve payroll information submitted by the Contractor and subcontractor(s) to ensure requirements for the Davis Bacon wage requirements are met, conduct labor interviews with the Contractor's personnel throughout the construction duration, and preparation and submittal of monthly disbursement requests with required supporting documentation to the FDEP SRF department in Tallahassee.<br>Key Staff: Christine Miranda | McNabb Hydrogeologic Consulting, Inc. (MHC) provided construction administration services for a Class I deep injection well system at the Okeechobee Utilities Authority Cemetery Road Wastewater Treatment Plant in Okeechobee County. The deep injection well system consists of one deep injection well with a total depth of 3,200 feet and dual-zone monitor well DZMW-1. Both the injection well and monitor well were constructed concurrently to allow the drilling contractor to complete the construction within a compressed contract time. Observation of construction of both wells required close coordination with the drilling contractor and client to ensure operation of 2 drilling rigs at the site did not interfere with plant operations. Each of the wells were constructed on a 24-hours a day, 7 days a week schedule, and were completed on time and on budget without a single hour of contractor stand-by time. Total project construction cost was $5.7 million. MHC subsequently provided professional services to include injection testing to re-rate the injection permitted capacity to 18.6 million gallons per day (mgd).<br>Key Staff: David McNabb, Sally Durall |
| Relevant Categories | Injection and Monitoring Wells Permitting, Design and Construction Oversight, FDEP SRF Loan Administration | FDEP SRF Loan Administration | Injection and Monitoring Wells Permitting, Design and Construction Oversight |
| Client, including address, phone number and contact person | Florida Power & Light<br>20505 State Road 80<br>Loxahatchee, FL 33470<br>Susan Mazur \| 561.904.4907 | City of Stuart<br>121 SW Flagler Avenue<br>Stuart, FL 34994<br>David Peters \| 772-288-1292 | Okeechobee Utility Authority<br>100 SW 5th Avenue<br>Okeechobee, Florida 34974<br>John Hayford \| 863.467.1785 |
| Original Schedule and Scope | 550 days - Design, permitting and construction administration services including on-site representation | January 2013-January 2017 (Final Completion January 2018 due to additional water main design and construction) - SRF loan assistance | 270 days - Design, permitting and construction administration services including on-site representation |
| Achieved Schedule and Scope | 550 days - Design, permitting and construction administration services including on-site representation | January 2013-January 2018 (due to additional water main design and construction) -SRF loan assistance | 270 days, Completed June 2017 - Design, permitting and construction administration services including on-site representation |
| Number of Change Orders or Amendments | None | One for additional design and construction services requested by client | None |
| Average Turnaround Time for RFI and Submittal Approvals | Average Turnaround time for RFIs - 4 business days<br>Average Turnaround time for Submittals - 4 business days | Average Turnaround time for RFIs - 3-5 business days<br>Average Turnaround time for Submittals - 3-5 business days | Average Turnaround time for RFIs - 5 business days<br>Average Turnaround time for Submittals - 5 business days |
| Cost of Project - Initial Cost Estimate | $8,750,000 | $539,190 | $6,200,000 |
| Cost of Project - Actual Cost | Client mandated confidential (completed under budget) | $580,225 | $5,772,100 |
| Point of Contact | Susan Mazur \| 561.904.4907 | David Peters \| 772-288-1292 | John Hayford \| 863.467.1785 |

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| Project Name | West Palm Beach Dual-Zone Monitor Wells | Martin County North Injection Well Repair | Key West Injection Well Repair and Mechanical Integrity Testing |
|---|---|---|---|
| Location | **West Palm Beach, Florida** | **Stuart, Florida** | **Key West, Florida** |
| Description of the Project, including size and scope | McNabb Hydrogeologic Consulting, Inc. (MHC) provided design, permitting and construction administration services for 3 dual-zone monitor wells associated with the Class I deep injection well system at the East Central Regional Wastewater Treatment Plant in West Palm Beach. Each of the monitor wells have a depth of approximately 2,300 feet. The project also included plugging and abandoning annular monitoring tubes. Observation of construction of the wells required close coordination with the drilling contractor and client to ensure that construction activities did not interfere with plant operations or other contractors working on the site. Each of the wells were constructed on a 24-hours a day, 7 days a week schedule, and were completed on time and on budget without a single hour of contractor stand-by time. MHC subsequently provided professional serves to obtain an operating permit for the injection well system which consist of 7 injection well and 7 dual-zone monitor wells.<br>Key Staff: David McNabb, Sally Durall | McNabb Hydrogeologic Consulting, Inc. (MHC) provided design, permitting and construction administration services for the repair of Class I Industrial injection well IW-2 at the County's North Water/Wastewater Treatment Plant. The consulting services for the mechanical integrity testing of the injection well were being provided by another consulting firm and the injection well was not passing the pressure test after multiple attempts. The County contacted MHC to investigate the cause of the failed pressure test. MHC correctly identified that the cause of the failed pressure test was due to a leak in the mechanical packer at the base of the injection tubing. MHC designed an innovative repair of the well that included cutting the fiberglass reinforced plastic (FRP) injection tubing 10 feet above the mechanical packer that was the source of the leak and then cemented the lower 70 feet of the injection tubing to re-establish mechanical integrity of the well. MHC subsequently provided professional services to obtain an operating permit for the injection well system.<br>Key Staff: David McNabb, Sally Durall | McNabb Hydrogeologic Consulting, Inc. (MHC) provided design and permitting services to allow the repair of a leak that had developed on the City of Key West injection well IW-1 wellhead. The repair was coupled with the mechanical integrity testing (MIT) of both injection well IW-1 and IW-2 to save capital funds by setting up the contract documents to include only one mobilization for the repair and MIT rather than two separate mobilizations.<br>Key Staff: David McNabb, Sally Durall |
| Relevant Categories | Injection and Monitoring Wells Permitting, Design and Construction Oversight | Injection and Monitoring Wells Permitting, Design and Construction Oversight, FDEP SRF Loan Administration | Injection and Monitoring Wells Permitting, Design and Construction Oversight, FDEP SRF Loan Administration |
| Client, including address, phone number and contact person | City of West Palm Beach<br>4325 N. Haverhill Road<br>West Palm Beach, Florida 33401<br>Cliff Sanders \| 561.835.7406 | Martin County Utilities<br>2378 S.E. Ocean Blvd.<br>Stuart, Florida 34995<br>Daryl Schuler \| 772.223.7957 | City of Key West<br>Trumbo Annex Point<br>Key West, Florida 33041<br>Elizabeth Ignoffo \| 305.809.3966 |
| Original Schedule and Scope | 300 days - Design, permitting and construction administration services including on-site representation | 90 days - Design, permitting and construction administration services including on-site representation | 60 days - Design, permitting and construction administration services including on-site representation |
| Achieved Schedule and Scope | 300 days, Complete June 2019 - Design, permitting and construction administration services including on-site representation | 90 days, Complete June 2016 - Design, permitting and construction administration services including on-site representation | 60 days, Complete April 2019 - Design, permitting and construction administration services including on-site representation |
| Number of Change Orders or Amendments | None | None | None |
| Average Turnaround Time for RFI and Submittal Approvals | Average Turnaround time for RFIs - 5 business days<br>Average Turnaround time for Submittals - 5 business days | Average Turnaround time for RFIs - No RFIs associated with this project<br>Average Turnaround time for Submittals - 2 business days | Average Turnaround time for RFIs - No RFIs associated with this project<br>Average Turnaround time for Submittals - 1 business days |
| Cost of Project - Initial Cost Estimate | $4,750,000 | $700,000 | $80,000 |
| Cost of Project - Actual Cost | $4,284,242 | $567,000 | $51,600 |
| Point of Contact | Cliff Sanders \| 561-835-7406 | Daryl Schuler \| 772.223.7957 | Elizabeth Ignoffo \| 305.809.3966 |

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| Project Name | Martin County Monitor Well Construction | North District WWTP Existing Deep Injection Well Pump Station Improvements | Construction Services for the Biosolids Improvements at East Central Regional Water Reclamation Facility |
|---|---|---|---|
| Location | **Stuart, Florida** | **Miami, Florida** | **West Palm Beach, Florida** |
| Description of the Project, including size and scope | McNabb Hydrogeologic Consulting, Inc. (MHC) provided design, permitting and construction administration services for the construction of dual-zone monitor well MW-2 at the County's North WTP/WWTP. The original monitor well had become plugged with material and was no longer able to be sampled. MHC developed specifications and a permit modification application to allow the plugging and abandonment of the original monitor well and the construction of dual-zone monitor well MW-2. Upper and lower monitor zone interval recommendations were prepared and submitted to the Florida Department of Environmental Protection (FDEP) immediately after obtaining all of the required testing data to support the recommendations to avoid any delays to the project and avoid stand-by time for the construction contractor. Both monitoring zone recommendations were approved by FDEP within 24 hours of submitting the recommendations.<br>Key Staff: David McNabb, Sally Durall | Brown and Caldwell completed the BODR and Design effort associated with the installation of new pumps Nos. 5 and 6 and the replacement of Pumps 1 through 4 in the existing Deep Injection Well Pump Station. The new pumps are rated for 16,000 gallons per minute (gpm) and are powered by 1,250 horsepower (hp) motors in order to maximize flow to the existing deep injection well system while providing a level of reliability and redundancy. In addition, the wetwell configuration was also evaluated using a physical model to ascertain the maximum hydraulic capacity and evaluate any hydraulic deficiencies that may possibly restrict peak pumping capacity of the pump station. Recommendations for improvements to the pump intake assembly were incorporated into the design.<br>Following design, the client issued an amendment for BC's scope to include construction services. Construction activities included proper review of contractor RFIs, shop drawing submittals, attending construction meetings, reviewing change order requests, routine progress site visits, development of record "as-built" drawings, attendance of factory tests to witness specified tests, start up assistance, acceptance testing and completion of O&M manual updates.<br>Key Staff: Albert Perez, Robert Abordo, Ravi Ravisangar, Viviana Villamizar, Robert Hrabovsky | Brown and Caldwell has worked on projects at the ECRWRF since being awarded a Professional Engineering Services contract in 2012. Since that time, BC has worked on a variety of assignments, both large and small, to optimize and improve the facility. As part of the $100 million Biosolids Improvement Project, BC provided value engineering reviews of the design and peer reviews of the final documents, qualification of general contractors including preparation of the technical RFQ, reviews of contractor responses, review of drawing and submittals, meeting attendance, and engineering advisory services for the construction of the gravity belt thickener and aeration basin #1.<br>Key Staff: Matthew Schultz |
| Relevant Categories | Injection and Monitoring Wells Permitting, Design and Construction Oversight, FDEP SRF Loan Administration | Injection and Monitoring Wells Permitting, Design and Construction Oversight | General Construction Administration Capabilities, Plant Design Capabilities |
| Client, including address, phone number and contact person | Martin County Utilities<br>2378 S.E. Ocean Blvd.<br>Stuart, Florida 34995<br>Daryl Schuler \| 772.223.7957 | Miami-Dade Water and Sewer Department<br>3071 SW 38th Avenue<br>Miami, FL 33146<br>Humberto Codispoti \| 305.275.3124 | City of West Palm Beach<br>401 Clematis Street, 2nd Floor<br>West Palm Beach, Fl 33402<br>Poonam Kalkat \| 561.822.2284 |
| Original Schedule and Scope | 150 days - Design, permitting and construction administration services including on-site representation | June 2014 - November 2017 - Preparation of basis of design report; hydraulic evaluation; electrical design; control system improvements; design; quality control and technical reviews; bidding assistance; services during construction | Value Engineering - 2014, GBT Construction – August 2017, AB1 Construction – August 2018 - Value engineering, peer review of design documents, contractor qualification assistance, bidding assistance, shop drawing submittal reviews, construction meeting attendance, engineering advisory services |
| Achieved Schedule and Scope | 150 days, Complete October 2015- Design, permitting and construction administration services including on-site representation | June 2014 - June 2019 - Preparation of basis of design report; hydraulic evaluation; electrical design; control system improvements; design; quality control and technical reviews; bidding assistance; services during construction | Value Engineering - 2014, GBT Construction – August 2017, AB1 Construction – September 2018 - Value engineering, peer review of design documents, contractor qualification assistance, bidding assistance, shop drawing submittal reviews, construction meeting attendance, engineering advisory services |
| Number of Change Orders or Amendments | None | Three amendments were issued at client's request to increase scope and add construction services | The gravity belt thickener and aeration basin #1 were part of a larger project, there were no change orders associated with our work |
| Average Turnaround Time for RFI and Submittal Approvals | Average Turnaround time for RFIs - No RFIs associated with this project<br>Average Turnaround time for Submittals - 4 business days | Average Turnaround time for RFIs - 22 business days<br>Average Turnaround time for Submittals - 24 business days | N/A |
| Cost of Project - Initial Cost Estimate | $1,250,000 | $922,421 | Biosolids Project - $92,602,000, GBT Construction – $4,075,000, AB1 Construction - $8,193,000 |
| Cost of Project - Actual Cost | $949,494 | $922,421 | Biosolids Project - $96,700,000, GBT Construction – $4,075,000, AB1 Construction - $9,880,000 |
| Point of Contact | Daryl Schuler \| 772.223.7957 | Humberto Codispoti \| 305.275.3124 | Poonam Kalkat \| 561.822.2284 |

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| Project Name | C-44 Reservoir-STA S-401 Pump Station Construction Management | Implementation and Construction Services for East Water Treatment Plant Improvements | Water Main Replacement Projects |
|---|---|---|---|
| Location | **Palm Beach County, Florida** | **Miramar, Florida** | **Hollywood, Florida** |
| Description of the Project, including size and scope | Brown and Caldwell assisted the District in the construction management of the S-401 Pump Station for the C-44 Reservoir/STA Project. The project includes the construction of a 21,000 square foot, fully operational, three-story pump station building with four 275 cubic feet per second (cfs) electric pump systems and the remaining 600 feet of the C-400 Intake Canal. This pump station will provide water from the C-44 Canal to the future C-44 Reservoir via the existing C-44 Intake Canal (C-400) at the rate of 1,100 cubic feet per second (cfs).<br>BC provided construction management services that included: (1) full time construction inspection and documentation; (2) materials testing; (3) routing and filing all project communications using the SFWMD provided Primavera Contract Manager software/ database; (4) representing the owner in meetings and daily communication; (5) review and approve all schedule updates and pay requests. BC has been recognized by SFWMD for outstanding performance and has ensured that all documentation, technical review, and correspondence is complete and accessible and provided on time in accordance with Contract requirements.<br>Key Staff: Albert Perez | Brown and Caldwell was hired by the City of Miramar to provide advisory and limited construction oversight services in support of the ongoing implementation of the City's East Water Treatment Plant improvements. The City is undertaking the replacement of its aging lime softening treatment facility with a new nanofiltration facility using a design-build (DB) approach. In our role, BC is augmenting the resources of the City's staff to provide oversight of the DB Contractor by providing project coordination, on-site inspection, meeting attendance, review of submittals and contractor pay requests, participate in substantial and final completion inspections and contract administration/closeout support for construction and start up planning efforts. BC also reviewed of design submittals and the construction guaranteed maximum price (GMP) for Phase 2A of the project and is also supporting the City's efforts to engage FDEP to address desired modifications to disposal to the injection well.<br>Key Staff: Nigel Grace, Matthew Schultz, Hector Serrano, Robert Hrabovsky | Brown and Caldwell provided design, permitting, and construction management services for water distribution system improvements for approximately 29,000 linear feet of new potable water main. This project involved work within a busy Florida Department of Transportation (FDOT) right-of-way, advanced permitting requirements, complex maintenance of traffic (MOT) considerations, the use of trenchless construction methods such as horizontal directional drill (HDD), and work with existing large diameter pre-stressed concrete cylinder pipe (PCCP).<br>Brown and Caldwell is in the process of surveying, geotechnical investigations, design, permitting, bidding, and limited construction administration services for the replacement of approximately 60,500 linear feet of water mains. Included is the replacement of all water mains located within the Hollywood Boulevard right-of-way including FDOT permit applications for Roadway Right-of-Way construction. It also includes the design of five horizontal directional drills (HDDs).<br>Key Staff: Nigel Grace, Celia Earle, Diego Herrera, Victor Hurlburt<br>Subconsultants: Gibbs Land Surveying; Nutting Engineers of Florida |
| Relevant Categories | General Construction Administration Capabilities | General Construction Administration Capabilities, Plant Design Capabilities, FDEP SRF Loan Administration | General Construction Administration Capabilities |
| Client, including address, phone number and contact person | South Florida Water Management District<br>3301 Gun Club Rd.<br>West Palm Beach, FL 33406<br>Jennifer Gent \| 561.682.2668 | City of Miramar<br>2300 Civic Center Place<br>Miramar, FL 33025<br>Whittingham Gordon \| 954.602.3120 | City of Hollywood<br>1621 N. 14th Avenue<br>Hollywood. FL 33022<br>Steve Joseph \| 954.921.3522 |
| Original Schedule and Scope | April 2015 - September 2018 - Full time construction inspection and documentation; QC/QA materials testing, test analysis and reporting;; review of shop drawing submittals, RFIs, COs, FOs and value engineering proposals; regular attendance at construction meetings; review and approve all schedule updates and pay requests and assist with verification of project completion and contract closeout/commissioning | BC was initially hired to assess the performance of the DB Contractor after construction was well underway. Following the conclusion of the initial assessment, BC was then hired to provide limited oversight of the completion of Phase 2 and the entire duration of Phase 2A.<br>Construction Status Review: September 2018 – November 2018<br>Construction Oversight: April 2019 - January 2020 | October 2013 - March 2015 - Data collection and review; topographical survey; geotechnical services; design; permitting; bid phase services; bid evaluation services; construction phase services |
| Achieved Schedule and Scope | April 2015 - September 2018 - Full time construction inspection and documentation; QC/QA materials testing, test analysis and reporting;; review of shop drawing submittals, RFIs, COs, FOs and value engineering proposals; regular attendance at construction meetings; review and approve all schedule updates and pay requests and assist with verification of project completion and contract closeout/commissioning | The ongoing project is on track to be completed on-schedule | October 2013 - May 2017 -Data collection and review; topographical survey; geotechnical services; design; permitting; bid phase services; bid evaluation services; construction phase services |
| Number of Change Orders or Amendments | Two amendments were issued at client's request to increase scope. | None | None |
| Average Turnaround Time for RFI and Submittal Approvals | Average Turnaround time for RFIs - 7 business days<br>Average Turnaround time for Submittals - 9 business days | Not applicable | Average Turnaround time for RFIs - 4 business days<br>Average Turnaround time for Submittals - 17 business days |
| Cost of Project - Initial Cost Estimate | $4,986,030 | Initial Status Review - $49,500; Limited Construction Oversight - $194,754 | $289,992 |
| Cost of Project - Actual Cost | $4,986,030 | The ongoing project is forecasted to be completed on budget | $289,992 |
| Point of Contact | Jennifer Gent \| 561.682.2668 | Whittingham Gordon \| 954.602.3120 | Steve Joseph \| 954.921.3522 |

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|---|---|---|---|
| Project Name | **Broward County Water and Wastewater Services' (BCWWS) North Regional WWTP Reclaimed Water Plant Expansion** | **Miami-Dade Water and Sewer Department's North District WWTP Headworks and Primary Sludge Degritting – BODR, Detailed Design and Engineering Services During Construction** | **North District WWTP Secondary Clarifiers - Emergency** |
| Location | **Pompano Beach, Florida** | **Miami, Florida** | **Miami, Florida** |
| Description of the Project, including size and scope | Besides curtailing the use of the ocean outfall as a primary means of disposal, the Ocean Outfall Rule also mandates the implementation of a wastewater reclamation program with a minimum capacity of 60 percent of the facility's Baseline Flow above and beyond current reclaimed water application. BCWWS tasked Brown and Caldwell to perform pre-design, detailed design, bidding and permitting services, and engineering services during construction for the expansion of the existing reclaimed facility to increase its firm rated capacity from 10 mgd to approximately 26 mgd. The expansion will treat secondary effluent to meet High Level Disinfection (HLD) standards as defined by the Florida Department of Environmental Protection (FDEP). The proposed expansion is estimated at $53 million construction cost and includes construction of a new filter feed pump station, additional filters, chemical storage and feed, chlorine contact basins, reclaimed water pump station, electrical power distribution and requisite back-up emergency power. Additional elements include integration of existing/aging infrastructure with proposed infrastructure; maintenance of operations during extensive electrical/structural/process tie-in; design process to handle wide-ranging operating conditions from startup to buildout; and coordination between BCWWS operations and engineering teams and eight subconsultants working on various elements. Design was completed in April 2018 and construction is currently underway.<br>Key Staff: Celia Earle, Nigel Grace, Robert Abordo, Ruth Burney, Hector Serrano, Viviana Villamizar, Robert Hrabovsky, Kenneth Hoff | The analysis conducted during the Master Planning stage determined that inefficiencies in the headworks system were costing MDWASD more than $200,000 annually in maintenance labor costs in addition to having to divert valuable staff resources to address the problem. Brown and Caldwell developed BODRs and detailed design for both the influent screens and degritting facilities. These BODRs evaluated the influent screens, primary sludge degritting system, plant sludge pumping to Central District WWTP system, and primary sludge pumping systems. One of MDWASD's critical success factors was to incorporate the headworks renovations within the existing building(s) to avoid the capital costs of a new structure. Because the plant must remain operational at all times, the construction sequencing specifications in the design documents were critical to maintain regulatory compliance while minimizing the potential for change orders during construction. Adherence to schedule goals was a top priority as this project was among the first in the WWTP Consent Decree program and had rigid completion milestones. The team worked closely with local permitting agencies to develop a streamlined process for submittals and reviews, initiated early completion of required permit documentation with MDWASD procurement staff, and recommended pre-purchase of major equipment with the longest lead times. These combined actions shortened the project schedule by approximately eight months. The project is nearing the end of the construction phase.<br>Key Staff: Albert Perez, Ravi Ravisangar, Ruth Burney, Viviana Villamizar, Robert Hrabovsky | Brown and Caldwell developed fast-track bid documents for the emergency rehabilitation of three 160-foot diameter secondary clarifier mechanisms that had reached the end of their useful life. The documents included specification and drawings for an emergency procurement/installation. Brown and Caldwell assisted MDWASD during equipment procurement with support for processing Contractor RFIs and shop drawing submittal review. Brown and Caldwell also provided periodic on-site construction phase support. This project was successfully completed on time, allowing MDWASD to avoid any problems during the outage of these units. The same approach was used next on seven more clarifiers at the NDWWTP, which had also reached the end of their useful life. Construction to replace the seven additional secondary clarifier mechanisms has been completed.<br>Key Staff: Albert Perez |
| Relevant Categories | General Construction Administration Capabilities, Plant Design Capabilities | General Construction Administration Capabilities, Plant Design Capabilities | General Construction Administration Capabilities, Plant Design Capabilities |
| Client, including address, phone number and contact person | Broward County Water and Wastewater Services<br>2555 W Copans Road<br>Pompano Beach, FL<br>Greg Balicki \| 954.831.0903 | Miami-Dade Water and Sewer Department<br>3071 SW 38th Avenue<br>Miami, FL 33146<br>Humberto Codispoti \| 305.275.3124 | Miami-Dade Water and Sewer Department<br>3071 SW 38th Avenue<br>Miami, FL 33146<br>Humberto Codispoti \| 305.275.3124 |
| Cost of Project - Initial Cost Estimate | $8,135,627 | $3,614,840 ($205,528 for BODR; $3,409,309.94 for Design and ESDC) | $466,515 |
| Cost of Project - Actual Cost | $8,135,627 (estimated, project ongoing) | $3,614,840 ($205,528 for BODR; $3,409,309.94 for Design and ESDC) | $466,515 |
| Number of Change Orders or Amendments | Six amendments have been received to date for additional scope items added by the client. | Two amendments received due to increase in scope by client. This project was completed over several task orders under the general engineering contract. | Two amendments were approved for additional scope items added by client. |
| Specific Service Performed by the Firm and if Firm was Primary Consultant | BODR, Survey (sub), SUE (sub), Geotechnical (sub), preliminary and final design, quality control, permitting, bidding services, engineering services during construction, resident project representative services<br>Prime - Wastewater Treatment Project, Design, Permitting | Alternatives analysis for influent screening, degritting and sludge pumping facilities; develop BODR; permitting; design; quality control and value engineering; electrical system improvements; construction phase services<br>Prime - Wastewater Treatment Project, Design, Bidding, Services During Construction | Basis of design report; evaluation of membrane bioreactor process alternative; design documents; preparation of bid documents<br>Prime - Wastewater Treatment Project, Design & Bidding |
| Average Turnaround Time for RFI and Submittal Approvals | N/A | Average Turnaround time for Submittals - 22 business days | Average Turnaround time for Submittals - 12 business days |
| Original Schedule | January 2015 - July 2016 (BODR and Design) | December 2008 - December 2018 | August 2014 - May 2017 |
| Actual Schedule/Date of Completion | January 2015 - April 2018 (BODR and Design, includes additional scope requested by client) | December 2008 - December 2018 | August 2014 - May 2017 |
| Point of Contact | Greg Balicki \| 954.831.0903 | Humberto Codispoti \| 305.275.3124 | Humberto Codispoti \| 305.275.3124 |

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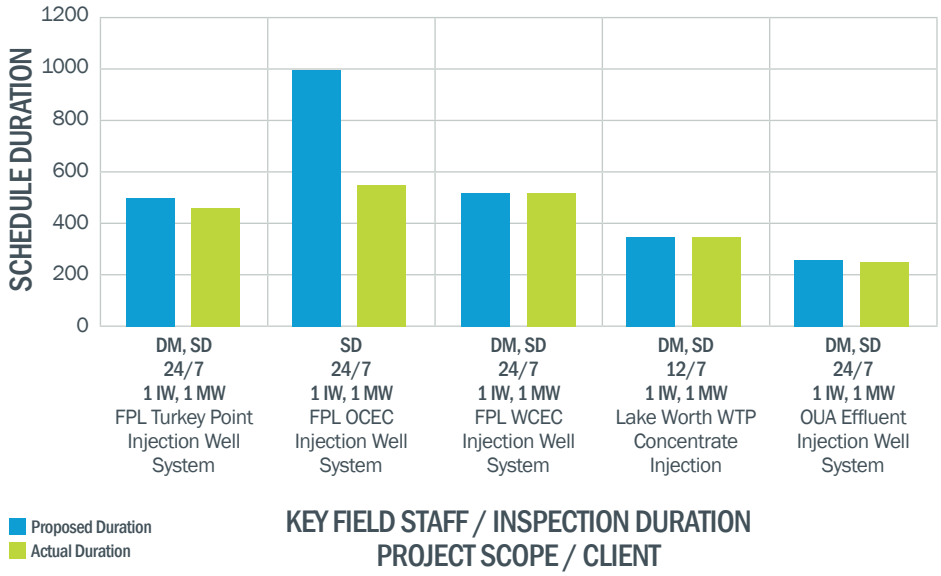
# Ability to Complete Project on Time

## The BC Team maintains an outstanding record of delivering high-quality projects on or ahead of schedule and within your budget.

The performance of our proposed lead hydrogeologist who will be overseeing observation and testing of well drilling activities, as well as the engagement of FDEP on permit required submittals/approvals is highlighted below for five recent projects that involved the construction of a deep injection well and dual zone monitoring well. All projects were completed on or ahead of schedule (with no construction change orders). Further details of these and other relevant projects are provided in the project descriptions provided at the end of this section. We are proud of our history with Hollywood where we have consistently demonstrated responsiveness and delivered on our widely variable commitments when promised.

At BC, we strive to consistently meet our schedules and budgets by first and foremost assigning the right team to each project and adding structure to the implementation by following a proven approach that uses 1) seasoned PM /highly qualified staff, 2) advanced tracking tools, 3) control processes, and 4) proactive risk mitigation. Our approach allows us to keep projects on track while enabling the project team members to focus their technical expertise to the best advantage.

### Construction Schedule for Recent injection Well and Monitoring Well Projects



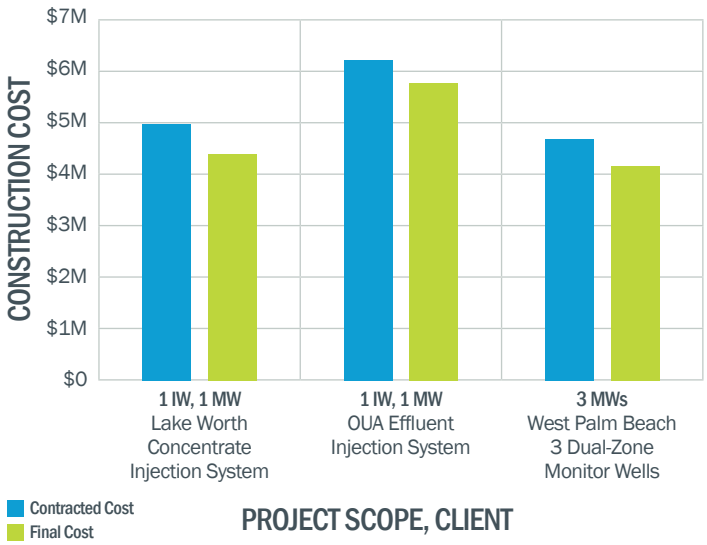

## Our Team members have an outstanding record of not only delivering work on time and on budget, but saving hundreds of millions of dollars delivering similar wastewater infrastructure upgrade projects.

# Ability to Complete Project on Budget

**Early detection and mitigation of issues through experienced committed professionals coupled with a comprehensive scope, schedule, budget, and risk management considerations leads to successful project delivery.**

Our Team specializes in improving project value and reducing your risk by working collaboratively with the Contractor and, additionally, controlling the project's schedule, cost, and quality. The end result is a project that is completed within the contracted budget for both construction and professional services. Though one client, FPL does not permit their actual construction costs to be disclosed, it is noted that all projects for which schedule performance were highlighted previously were also completed for less than the contracted construction cost. For projects where public disclosure of well drilling cost is permitted, the chart at right summarizes the contracted vs actual cost for the project. In all cases, consultant services were provided within budget.

## Track Record of Completing Deep Injection and Monitoring Well Projects within Budget




## Proven Partnership. Trusted Solutions.

For the recent $23 million Miami-Dade Water and Sewer Department (MDWASD) North District WWTP (NDWWTP) Headworks Upgrades project, BC delivered on time, on budget, and with an engineer's estimate that accurately predicted the construction bids.

BC reduced review time and streamlined the approvals process through workshops with MDWASD for the fast-track South District WWTP (SDWWTP) Cogeneration Facility. With our contractor partner, we delivered the $25 million project on time and on budget.

# Litigation

**This page includes information on any litigation BC has been involved in within the last five years.**

## Confidential, Not for Distribution

As a national firm with over 60 offices, Brown and Caldwell, in the course of our business, occasionally becomes involved as a party in claims, disputes or litigation. Information about specific claims, disputes, or litigation in which Brown and Caldwell is involved is considered confidential to the company and its clients. The following responses are considered highly confidential and we are providing this information on the understanding that you will protect its confidentiality accordingly and restrict distribution solely to the extent required to review Brown and Caldwell's qualifications. There is no pending claim, litigation or dispute involving Brown and Caldwell which could be anticipated to adversely impact Brown and Caldwell's financial or professional ability to render services requested in this RFQ. Brown and Caldwell has been a party in the following litigation in the past 5 years immediately preceding the date of our response to this RFQ. Any additional questions should be directed to Robert D. Goodson, Senior Vice President and General Counsel.

*William W. Wheeler, III, as Special Administrator of the Estate of Juan De Dios Marin Penaloza, Plaintiff v. Carolina Tap & Bore, Inc., and Brown and Caldwell, Defendants, Case No. 2018CP28-01000, filed in the South Carolina Court of Common Pleas on November 27, 2018*. The Complaint claims Mr. Penaloza died while working for Northeast Backflow, Inc. (NEB) on a project where NEB was responsible for a trench that collapsed on him on 9/9/16. NEB is not named in the lawsuit. Carolina Tap and Bore, Inc. (CTB), the prime contractor that subcontracted with NEB, is alleged to have negligently selected, inspected and/or supervised NEB. Brown and Caldwell (BC), as the City of Camden's Engineer on the Project, is alleged to have negligently inspected the site, despite the fact that BC's services during construction included only a maximum of eight hours at the site per month to attend a progress meeting and observe the general progress of the overall project. BC does not believe it bears any responsibility in this matter; discovery and investigation are ongoing.

*Renfrow Brothers, Inc. v. Brown and Caldwell, Inc., et al, Case No. 17-CV-132, filed in the Chancery Court for Jefferson County, Tennessee, on October 27, 2017.* This is a subcontractor change order/cost claim on a wastewater facility project against the Design-Builder (a Joint Venture between Brown and Caldwell and Haskell, although those entities were incorrectly named directly instead), which was satisfactorily resolved after the filing and subsequently dismissed before Defendants answered the Complaint.

*Timothy Pearson, Plaintiff v. BASF, Inc.; Brown and Caldwell, Inc.; John Does (1-5); ABC Cos (1-5), Defendants, Case No. MID-L-003363 17, filed in the Superior Court of New Jersey on June 2, 2017.* Brown and Caldwell Constructors (BCC), incorrectly named as BC, performed operations and maintenance services in connection with a continuing environmental remediation effort at a BASF site at Toms River, New Jersey. Plaintiff, an onsite security guard, claimed a slip and fall accident occurred due to ice and snow or other conditions. The matter was satisfactorily resolved consistent with BCC's view that it was not responsible for the injury.

*Hans and Barbara Gaiser and Villa Ventura Apartments LLC v. Valley Metro Rail et al., Case No. CV2015-010237, filed in Superior Court, Maricopa County, Arizona on August 19, 2015.* Plaintiffs alleged that Brown and Caldwell and others were negligent and caused damage to an apartment complex adjacent to a light rail line expansion project. Brown and Caldwell demonstrated that its limited role working for City of Phoenix Water Department to develop standards as to their utilities, that then had to be complied with by others that designed and constructed the light rail expansion, were not related to the claims asserted in the lawsuit. Plaintiffs agreed and subsequently dismissed Brown and Caldwell from the action in 2015.

Section 5C

# Project Team

# Project Team

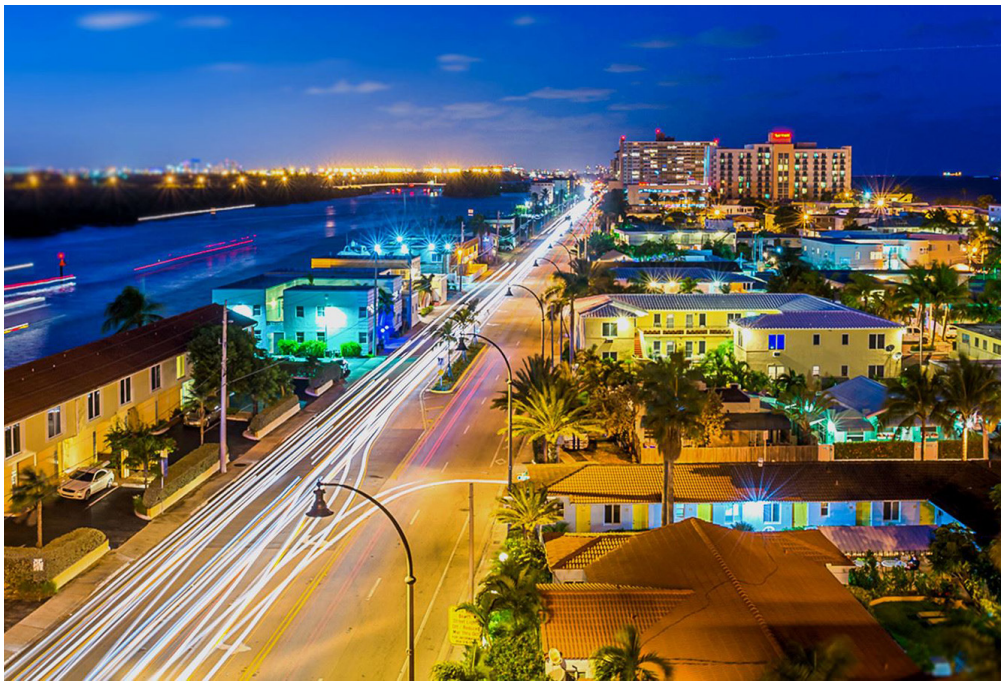
# 5C

## The Right Team for This Contract

### Our Team is ready to begin work immediately to deliver project success for the City of Hollywood.

BC is a firm that brings the right resources to our clients. Our firm's size enables us to customize trusted solutions, and our culture encourages practical innovation. We collaborate as one with our clients and, in doing so, we have earned their respect and continuing trust. Through our work on City projects, and in our meetings with staff, we know what you expect in a consulting firm. As a result, each member of our Team was specifically selected for this contract based on his/her technical expertise, prior working relationships with each other, and previously demonstrated ability to be responsive and reliable.

BC offers the City a Team that delivers exceptional project management, preconstruction and project coordination, technical direction, observation of drilling services, coordination with the City and FDEP, permitting, engineering support services, and QA/QC for this project. The depth of our Team and our locality allow us to quickly respond to the City's requests. Our organizational chart, as well as brief summaries of our key Team members, are listed on the following pages and more information can be found about our Team in Appendix A - Resumes.



section overview

This section describes the organization of our team (including our subconsultant team members), their experience with similar projects, qualifications, educational background, level of involvement and estimated hours for each Team member. This section also describes what municipal staff support is anticipated.

**Selection Criteria**

- ✓ Expertise of Designated Staff
- ✓ Previous Performance on Related Projects

**BC's company organization is structured to offer a local, committed team supported by more than 1,600 national resources as needed.**

# Organized to Confidently Deliver Your Project

## The structure of our Team is built to deliver the highest value to the City of Hollywood.

**PRINCIPAL-IN-CHARGE**
Albert Perez, PE

**CLIENT SERVICE MANAGER**
Celia Earle, PhD

**PROJECT MANAGER/ENGINEER OF RECORD**
Nigel Grace, PE

**HYDROGEOLOGIST OF RECORD**
David McNabb, PG[1]

**QUALITY CONTROL/TECHNICAL ADVISORS**
Gregg Jones, PhD, PG *(Hydrogeology)*
Matthew Schultz, PE *(Construction)*
David Holtz, PE, BCEE [2] *(Design/Permitting)*

## Key Technical Resources

### WELL CONSTRUCTION CONTRACT SERVICES

**PRECONSTRUCTION**
Nigel Grace, PE
David McNabb, PG[1]
Diego Herrera, PE
Kenneth Hoff, CSP, CHST

**SERVICES DURING CONSTRUCTION**
David McNabb, PG[1]
Matthew Schultz, PE
Sally Durall[1]
Mitchell Jennings[2]

**STATE REVOLVING FUNDS ASSISTANCE**
Celia Earle, PhD
Christene Miranda, PE[2]

**FDEP COORDINATION & PERMITTING**
Nigel Grace, PE
David McNabb, PG[1]

**CONTRACT CLOSEOUT**
Diego Herrera, PE
Nigel Grace, PE
Brice Wimsatt

### POST-CONSTRUCTION OPERATIONAL TESTING

**PLANNING**
George Bloom, PE*
Ravi Ravisangar, PhD, PE, BCEE*

**DESIGN SUPPORT**
George Bloom, PE*
Victor Hurlburt, PE
Ruth Burney, PE

**PERMITTING**
Nigel Grace, PE
David McNabb, PG[1]

## Subconsultants

[1]McNabb Hydrogeologic Consulting, Inc. (Hydrogeology)
[2]Holtz Consulting Engineers (SRF Administration)
Gibbs Land Surveyors (Survey)
Nutting Engineers (Geotechnical)

## Support Personnel

Robert Hrabovsky, PE (Structural)
Robert Abordo, PE (Electrical)
Hector Serrano, PE (Instrumentation)
Viviana Villamizar (Project Engineer)
Harrison Barron, EI[2] (Project Support)
Curtis Robinson[2] (Project Support)

** Out of State License*

# Proven Leadership You Know and Trust

## The City of Hollywood can take confidence in our leadership. This team has worked together for years to support you with consistent, successful project delivery.

Our project management team brings unmatched knowledge of this project through their collaboration building the foundation for this project over the past five years. They bring the technical insights, momentum, team cohesion and readiness to mobilize immediately, with no learning curve.


## Nigel Grace, PE

**PROJECT MANAGER/ENGINEER OF RECORD**

Nigel Grace brings more than 28 years of experience serving in wide-ranging roles in the management and direction of complex multi-disciplinary projects that draw on diverse skill sets in areas of technology applications, regulatory negotiations, and operational/process optimization. Additionally, he currently serves as one of the firm's water technology leaders and through this experience brings broad insights on emerging issues of concern and the complex challenges faced by the utility community. For almost 20 years, he has served a wide array of engineering needs for the City of Hollywood, including master planning, water supply and water treatment system expansion, reclaimed water planning and regulatory advocacy, and ongoing distribution system water quality optimization. Through his efforts, he has played an instrumental role in supporting the development of the City's diverse portfolio of water supplies, as well as a modified plan for complying with the Ocean Outfall Legislation that resulted in concessions that saved the City over $200 million.

EDUCATION: BS, Chemical Engineering, University of Florida; ME, Environmental Engineering, University of Florida


## David McNabb, PG *(MHC)*

**HYDROGEOLOGIST OF RECORD**

David McNabb has been providing Class I deep injection well consulting services since 1995, providing design and construction oversight on 20 deep injection wells throughout his career. In 2006, he formed McNabb Hydrogeologic Consulting, Inc. His firm, located in Jupiter, Florida, exclusively provides injection well permitting, design, testing, and construction administrative services. His firm has specialized in efficient, value-driven, Class I deep injection well consulting services with a focus on providing fluids disposal for municipal utility departments and the power generation industry. He is recognized as an expert in the field of Class I deep injection wells.

David holds a Master of Science degree in geology from the University of Texas at Arlington and spent five years in the oil industry before focusing on deep injection wells. He began his injection well experience in 1992 while serving as a deep injection well permit processer in the West Palm Beach office of the Florida Department of Environmental Protection (FDEP) Underground Injection Control group. His experience with FDEP has provided him with the insight and strong relationships to guide deep injection well projects smoothly through the regulatory process.

EDUCATION: BS Geology, Indiana University; MS Geology, University of Texas at Arlington

# High Level Management that will get the Job Done Right

## You can count on our top management to ensure that all members of the BC Team will work together effectively to meet all our commitments.

Our senior managers are well known to the City of Hollywood and bring proven experience serving in their assigned role on past projects. They will work in unison to enable our entire team to meet our commitments and your expectations on this project. They serve in complementary senior leadership roles in our firms so they have the ability to draw in additional resources as needed.


### Celia Earle, PhD
**CLIENT SERVICE MANAGER**

**EDUCATION**

BS Environmental Engineering University of Florida; BS Microbiology and Cell Sciences University of Florida; MS Environmental Engineering University of Florida; PhD Environmental Chemistry University of Florida

**EXPERIENCE SUMMARY**

Dr. Celia Earle brings more than 26 years of experience as an environmental engineer, environmental chemist, and microbiologist, and thus has a unique profile in the environmental arena. She has a breadth of knowledge that includes planning, design, and construction administration for water, wastewater and reclaimed water systems, non-revenue water reduction and management, energy efficiency assessments, condition assessments, compliance assessments, program management, design-build delivery and various feasibility studies and investigations. She has consistently served as the firm's client service manager and project manager for the City of Hollywood projects including ocean outfall-related studies, water treatment plant expansions, buried infrastructure, master planning, water supply planning, and billing system migration.


### Albert Perez, PE
**PRINCIPAL-IN-CHARGE**

**EDUCATION**

BS, Civil Engineering, Florida International University

**EXPERIENCE SUMMARY**

Albert Perez is a progressive and visionary leader with over 26 years of experience in the water and wastewater business sector. Prior to joining BC, he served in the capacity of Utilities Director for the City of Hollywood. In his capacity, he developed a keen understanding of the City's needs, key stakeholders, and processes for prioritizing the delivery of improvements. This level of involvement provides a unique perspective that he will access to ensure Hollywood's needs are met. Albert has served as Principal-in-Charge for all City of Hollywood contracts. He is currently responsible for overseeing Brown and Caldwell's Florida Operations and, in this capacity, is well positioned to ensure that appropriate resources are committed to this project.

# Proven Partnership. Trusted Solutions.

## Our project Team offers:

- No learning curve with several decades of Hollywood experience
- Vast experience with deep injection wells
- Expertise delivering some of the most complex wastewater projects in Florida
- Unparalleled knowledge of Hollywood's most critical water quality and compliance needs
- More than 275 years of combined project management experience
- Availability and commitment to the City of Hollywood
- Credibility to be trusted with your most important priorities and the respect of key stakeholders
- BC's safety record is consistently below the industry average

# Leading Industry Experts to Guide the Project

## Our Team includes industry experts who will provide technical advisory and quality control support on this project to ensure we meet your goals and vision.

Throughout the duration of this project, the BC Team will closely collaborate with these individuals to proactively review areas within the project that may impact the schedule, budget and quality to maintain successful delivery.


### Gregg Jones, PhD, PG

**Hydrogeology**

#### EDUCATION

PhD, Geochemistry, University of South Florida; MS, Hydrogeology, Geophysics, University of South Florida; BS, Geology, Florida Atlantic University

#### EXPERIENCE SUMMARY

Recognized expert in the hydrogeology and geochemistry of Florida karst aquifers with extensive experience with springs assessments and protection. He spent 22 years with the SWFWMD where he oversaw groundwater modeling and hydrogeological investigations; water quality monitoring; regional water supply plan development; ASR program; and reclaimed water and conservation projects.

#### PROJECTS PERFORMANCE

- Oversight of the aquifer recharge program (SWFWMD, FL)
- Peer review for many Minimum Flows reports for the FL Water Management Districts


### Matthew Schultz, PE

**Construction**

#### EDUCATION

BSME, University of Denver; BSEE, University of Denver

#### EXPERIENCE SUMMARY

Matthew brings 19 years of South Florida experience focused on the design, construction, commissioning, and optimization of treatment plants, pipelines, and large pumping systems. His recent experience has included the front-end project delivery planning, alternatives analysis, design-builder and contractor evaluation and selection, and general program and project management.

#### PROJECTS PERFORMANCE

- Managed construction and engineering for the $120M Biosolids Improvement Project at the ECRWRF (Palm Beach, FL)
- Construction inspection and oversight for $375M facilities expansion program (Cape Coral, FL)


### David Holtz, PE, BCEE

**Design/Permitting**

#### EDUCATION

BS, Environmental Engineering, University of Florida; MS, Environmental Engineering, University of Florida

#### EXPERIENCE SUMMARY

Over 30 years of comprehensive water, wastewater and reclaimed water engineering experience in Florida with significant experience with deep injection wells and has been the Engineer of Record for numerous significant utility improvement projects. He oversees execution and quality control for capital improvement project for numerous public utilities in Southeast Florida.

#### PROJECTS PERFORMANCE

- Design, permitting, testing and construction oversight for exploratory and DIW (Palm Beach County, FL)
- Mechanical integrity testing and replacement of monitor well (Palm Beach, FL)

## Our Team brings more than 275 years of combined specific experience to this project.

# Key Personnel

## This team is recognized for their accomplishments in their areas of expertise and are prepared to bring this industry expertise to the City of Hollywood for this project.

We present a well-organized team comprised of local people you know and trust, who bring recent, relevant City of Hollywood experience. Our technical advisors bring well-grounded local experience to our team to provide valuable quality control (QC) and quality assurance (QA) on each project. Their primary responsibility is to review your goals and make sure our work meets strict QC requirements and integrates the latest industry thinking and standards.


### Diego Herrera, PE

**Well Construction Contract Services, Preconstruction and Closeout**

#### EDUCATION

BS, Civil Engineering, Military School of Engineering AJS, La Paz, Bolivia

#### EXPERIENCE SUMMARY

More than 15 years of experience in project management and civil and environmental design for water and wastewater projects. His expertise includes design, permitting, bidding, construction administration an inspection, startup and O&M for utility projects. He has successfully completed more than 200 projects for utilities throughout Florida.

#### PROJECTS PERFORMANCE

- Design of Deep Injection Wells No. 3 and No 4 (Hollywood, FL)
- Design and construction services for Lift Station and Force Mains (Palm Springs, FL)
- Infrastructure improvements for multiple agencies (Palm Springs, FL)


### Sally Durall (MHC)

**Well Construction Services During Construction**

#### EDUCATION

BS, Geology, University of Tennessee at Knoxville

#### EXPERIENCE SUMMARY

17 years of experience with Class I deep injection well construction services. The majority of career has been focused on deep injection wells in South Florida. She began her injection well experience in 2002 while serving as a deep injection well field geologist for the water resources group at a South Florida consulting firm.

#### PROJECTS PERFORMANCE

- Construction oversight services, resident observation and consulting services for mechanical integrity testing and operating permit renewal for construction of a Class I Industrial deep injection well system (Port St. Lucie, FL)
- Provided design and permitting services for a deep injection well system for disposal of wastewater for the City's South Regional Wastewater Treatment Facility (Port St. Lucie, FL)


### George Bloom, PE

**Post-Construction Operational Testing Planning and Design**

#### EDUCATION

BS, Environmental Science, Cornell University

#### EXPERIENCE SUMMARY

More than 39 years of utility project management and engineering experience including planning, permitting, evaluation, design, construction and startup of wastewater collection, transmission and treatment facilities.

#### PROJECTS PERFORMANCE

- Oversaw R&R assessment of current conditions and prioritization of improvements (Palm Beach County, FL)
- Quality control for QC headworks and process improvements (Miami-Dade, FL)
- Design manager and process design lead on a major upgrade at the 110 mgd Coney Island WPCP (New York City, NY)

# A Reliable Team with a History of Delivery

## Technical support resources provide a proven partnership for successful project delivery.

Each member of our Team was selected based on his/her availability, expertise, and connection to our relevant project experience. Individually, they bring specific experience relevant to performing this project. Together, they provide a strong, cohesive unit to effectively deliver this important project for the City.

| | Experience Summary | Performance on related Projects |
|---|---|---|
|  | **Kenneth Hoff, CSP, CHST**<br>Health and Safety<br>13 years of experience in environmental health and safety (EHS) program development, internal and external customer communication, and hazard mitigation techniques. He has extensive experience in implementing effective EHS policies and processes, establishing training programs, and executing metrics-based operational decisions.<br>EDUCATION: BS, Workforce Leadership (Occupational Training and Development), University of Louisville | Has developed and performed Health and Safety Plans/Audits for:<br>• Miami-Dade Water and Sewer Department<br>• Broward County Water and Wastewater Services<br>• City of Sunrise<br>• West Palm Beach County<br>• And numerous other clients |
|  | **Victor Hurlburt, PE**<br>Post-Construction Operational Testing Design Support<br>Over 45 years' experience designing buried infrastructure, pump stations, supply and treatment projects, reclaimed water transmission projects, wastewater collection. He has also managed the design of over 125 miles of pipelines (various applications) with sizes as small as 4-inch and up to 48-inches.<br>EDUCATION: BS, Civil Engineering, University of Vermont | • QA/QC reviewer for design of Deep Injection Wells No. 3 and No 4 (Hollywood, FL)<br>• Wells and raw water mains (Hollywood, FL)<br>• Design and construction services for replacement of 29,000 linear feet of water mains (Hollywood, FL)<br>• Design and construction services for sewage force main improvements (Miramar, FL) |
|  | **Mitchell Jennings (MHC)**<br>Well Construction Services During Construction<br>Four years of experience in environmental consulting, including well construction and permitting. He provided field administrative services for the permitting and construction of groundwater monitoring wells at multiple solid waste disposal facilities throughout middle and east Tennessee before coming to Florida in 2019.<br>EDUCATION: BS, Geology, East Tennessee State University | • Provided permit renewal services for the operating permit of a Class I deep injection well system (Immokalee, FL)<br>• Construction administration services for the abandonment of the upper and lower monitoring zones of monitor well MW-1 (Coral Springs, FL)<br>• Field services for mechanical integrity testing of the Frankens Energy Class I deep injection well (Vero Beach, FL)<br>• Construction oversight for the installation of multiple groundwater monitoring wells throughout Tennessee |
|  | **Christine Miranda, PE (Holtz)**<br>State Revolving Fund Assistance<br>Over 20 years of experience in the design of water treatment and distribution systems, wastewater treatment and collection systems, pumping stations, effluent disposal systems, and biosolids management. She has successfully managed complex and fast paced projects with numerous disciplines and subconsultants.<br>EDUCATION: BS, BioResource Engineering, Rutgers University | • Application, public meeting assistance, construction phase SRF compliance activities for water distribution improvements (Stuart, FL)<br>• SRF funding assistance for alternative water supply and treatment improvements (Stuart, FL)<br>• Preparation and submittal of application documents for SRF loan for water main interconnects (Pompano Beach, FL)<br>• SRF loan administration assistance for pretreatment system construction (Stuart, FL) |

| | Experience Summary | Performance on related Projects |
|---|---|---|
|  | **Brice Wimsatt**<br>Well Construction Contract Services, Closeout<br>More than two years of experience with on-site field operations, environmental sampling, remediation and compliance support. Brice has provided dedicated support for complex environmental projects throughout the state.<br>EDUCATION: BS, Geology, Florida Atlantic University | • Geologic testing at the NDWWTP to support FDEP permits (Miami, FL<br>• On-site field operations including well installation, soil and groundwater sampling, installation of data loggers and data collection (Orlando, FL)<br>• Site inspection and report creation, preparation of quarterly reports (Sanford, FL)<br>• Construction site inspections for nationwide retailer to assess health and safety work practices and to ensure environmental compliance (Multiple locations throughout FL) |
|  | **Ravi Ravisangar, PhD, PE, BCEE**<br>Post-Construction Operational Testing, Planning<br>21 years of experience in water and wastewater pumping system analysis and design, pumping system rehabilitation, water and wastewater plant hydraulic analyses, water distribution system modeling, dynamic and transient hydraulic analysis of piping networks, surge protection systems design, and sludge and slurry rheology and hydraulics of non-Newtonian fluids.<br>EDUCATION: PhD, Environmental Engineering, Georgia Institute of Technology; MS, Civil Engineering, Environmental Hydraulics and Water Resources, Georgia Institute of Technology; MS, Environmental Engineering, Georgia Institute of Technology; BSc, Civil Engineering, University of Sri Lanka at Peradeniya | • Dr. Ravisangar led the design effort of adding new pumps for existing deep injection well pump station at the MDWASD North District WWTP. Project involved detailed evaluation of existing pumping system, deep injection well performance, recommendation for replacement pumps, modifications to existing well heads, and developing new control strategies for pump and well operation for optimized performance. (Miami-Dade, FL)<br>• Developed a surge model for the Pump Station associated with the North Regional WWTP Reclaimed Water Plant Expansion, Broward County Water and Wastewater Services' (BCWWS). (Broward County, FL) |
|  | **Ruth Burney, PE**<br>Post-Construction Operational Testing, Design Support<br>9 years of experience with wastewater planning, design, permitting, bidding, field inspection, operations and maintenance and report writing.<br>EDUCATION: BS, Environmental Engineering, University of Florida | • Designed the removal and replacement of PCCP process pipe ranging from 42 to 64 inches in diameter (Fort Lauderdale, FL)<br>• Data analysis and document reviews for the renewal of the Domestic Wastewater Facilities Permit with the FDEP (Fort Lauderdale, FL)<br>• Designed headworks improvements for the ECRWRF (West Palm Beach, FL)<br>• Office Engineering for construction implementation of 4 mgd HLD at Sawgrass WWTP (Sunrise, FL) |
|  | **Robert Hrabovsky, PE**<br>Structural<br>35 years of experience in management, structural design, and construction of public utility and public works facilities. He provided structural engineering and design for everything from water and wastewater treatment plants and infrastructure to solid waste facilities and roadway construction. He has served as the Structural Engineer of Record for many Florida projects.<br>EDUCATION: BS, Civil Engineering, University of Pittsburgh | • Structural design and office engineering services during construction of the rehabilitation of the screenings and grit facility at the Sawgrass WWTP (Sunrise, FL)<br>• Structural design and office engineering services during construction for the $11 million greenfield 0.3 mgd wastewater treatment plant (FKAA, FL)<br>• Structural design review of the headworks renovation (Miami-Dade, FL) |

# Subconsultants with a Proven Track Record

**We have strategically teamed with local subconsultants who are familiar, experienced and bring specialty skills, expertise and complementary capabilities that enhance our offerings to the City.**

## McNabb Hydrogeologic Consulting, Inc. // Hydrogeology

McNabb Hydrogeologic Consulting, Inc. (MHC) is a Southeast Florida-based hydrogeologic consulting firm specializing in deep injection well, aquifer storage and recovery well, and production well design, permitting, resident construction observation, and reporting services. Their focus is to provide efficient, value-oriented services to every one of their clients. The staff at MHC offer over 35 years of Florida hydrogeology consulting experience, most of which has been focused on deep injection well systems. The company staff has strong rapport with regulators and a thorough understanding of regulatory issues related to well design, permitting, testing, construction and operation allowing them to minimize permitting time and capital costs for their clients. *Hollywood Experience : Backup Concentrate Injection Well Disposal Study.*

## Holtz Consulting Engineers, Inc. // SRF Assistance

Holtz Consulting Engineers, Inc. (HCE) was founded in Jupiter, Florida in 2006 to assist local utilities with high-quality, responsive, and efficient engineering services on water and wastewater and general infrastructure improvement projects. HCE's experienced staff consists of professional engineers, construction managers/inspectors, designer/drafters, and support staff. HCE provides significant experience and capabilities in all phases of utility improvement project implementation - including planning, grant writing and funding analysis, permitting, hydraulic modeling, design, procurement, construction services, start-up, and operations assistance. Our firm specializes in providing efficient and cost-effective utility engineering services to local clients in South Florida.

## Gibbs Land Surveyors // Land Surveying and Easements

Gibbs Land Surveyors (GLS) is a local firm that started in 1988 with offices located in downtown Hollywood. All of their surveying is performed from this location. GLS has been the consulting surveyors for the City of Hollywood for the past 20 years. Additionally, they have performed numerous surveys for other cities in Broward County and Dade County. Their key personnel have over 30 years of experience in performing all aspects of land surveying services. GLS's surveying experience has been primarily in the performance of boundary surveys, as-built surveys, construction surveys, control surveys, topographic surveys and hydrographic surveys. They utilize state-of-the-art surveying equipment including electronic total stations, digital levels, Real- Time Kinematic GPS equipment and electronic data collection. *Hollywood Experience: Extensive, including three water main replacement projects with Brown and Caldwell.*

## Nutting Engineers of Florida, Inc. // Geotechnical Engineering

Nutting Engineers of Florida, Inc. (NEF) has been one of the premier geotechnical engineering firms in South Florida since its inception in 1967. NEF's comprehensive range of services include geotechnical exploration and engineering including monitoring of pile installation, groundwork modification and chemical grounding procedures, quality control/ quality assurance testing of construction materials, structural inspections (special/threshold) of structures, indoor air quality, Phase I and Phase II environmental property assessments, contamination assessments and remedial action designs. *Hollywood Experience: Extensive, including three water main replacement projects with BC.*

## Proven Partnership. Trusted Solutions.

**Complete resumes highlighting our team's educational background and depth of experience can be found in Appendix A.**

# Estimated Participation Commitment for Each Team Member

## We have carefully selected Team members who not only bring relevant experience but have immediate availability to dedicate to this project.

The BC Team has the resources and proven approach to successfully manage this project in a manner that will control engineering costs and schedule. More importantly, our Team includes individuals with experience gained on similar projects, and who possess leadership skills demonstrated on past projects.

On every project, there are common concerns related to scope, schedule, staffing, safety, and budget that become an integral part of the project's success. For the proposed work, our Team composition may be broadly categorized as follows:

1. Core Team members that will be committed to support the field observation well drilling activity. They are available anywhere from half-time to full-time, subject to the City's preference and the project execution requirements. All field observation staff will be exclusively committed to this project for the duration of the project. Sally Durall will lead field observation and will be supported by a team that will provide relief inspection support subject to agreed-on coverage. Table 5C-1 shows the staff and labor hours committed for this key role.
2. Another critical role is coordination with FDEP for required periodic updates and approvals, inspecting lithologic data, development of casing setting recommendations, and oversight of the technical decisions associated with drilling activity and preparation of necessary reports. As Lead Hydrogeologist for the project, David McNabb will oversee direction of these elements and will additionally commit a portion of his time for field inspection, observation of tests, and coordinating the efforts of assigned field staff. Table 5C-1 shows the labor hours committed to David's time for his oversight role.
3. Construction administrative support will be provided by a team that will include the Engineer of Record (Nigel Grace) who will be supported by others handling periodic progress inspections, SRF loan administration, coordination with the City's operations staff, observe installation of temporary piping systems construction contract administration, and closeout activities. This group also includes specialized technical support that may be tapped on an as-needed basis to support expeditious and appropriate response to issues that may arise during the course of the project.
4. The Operation Testing phase that will follow the completion of construction will require the design, permitting and installation of permanent elements of the wellhead and piping system to support long-term operational testing. These elements will be designed to be incorporated in the permanent integrated system. A team of hydraulic and design professionals has been assembled to take on the task of providing design, permitting and bid support services for the implementation of required improvements. George Bloom will serve as design manager and lead design development and discipline coordination efforts.

**TABLE 5C-1.** Data Table With Alternating Rows Table Style

| Role | Team Members | Allocated Labor (hours) | | Notes |
|---|---|---|---|---|
| | | Half Time | Full Time | |
| Lead Hydrogeologist | David McNabb | 1750 | 1750 | Certifications, FDEP reporting, special inspections, etc. |
| Lead Field Hydrogeologist | Sally Durall | 4800 | 4800 | Committed full-time for duration of active well drilling |
| Relief Hydrogeologists & Engineers | Mitchell Jennings<br>Brice Wimsatt<br>Viviana Vilazimar | 4800 | 14400 | Depending on inspection coverage, two to three will be committed full-time for duration |
| Reserve Backup | Harrison Barron<br>Curtis Robinson | As-needed | As-needed | Additional resources to support field observation as-needed |

Beyond the estimated labor for oversight of well drilling activities, the level of anticipated project participation will vary widely among the various assigned tasks and project specific needs that may emerge from time to time. For example, some staff may require sustained involvement for very short durations (e.g. resolving an issue) whereas others may have sustained low level engagement for long durations (e.g. attendance of progress meetings or SFR loan administration). Consequently, staff commitments vary from full-time to as-needed support. In the case of Phase 2 (post-construction) activities, the permitting of wellhead and piping improvements may present a potential opportunity for the City to consider and the level of effort depends on the direction taken. Based on these considerations, Table 5C-2 below represents our current vision of the average amount of each team member's (not already addressed in Table 5C-1) time committed to complete their respective project assignments. Additionally, the estimated aggregate staff hours assigned to each task is provided in Section 5D, Approach.

**TABLE 5C-2. Average commitment of team members to complete their assignments.**

| Personnel | Role | Total Estimated Participation |
|---|---|---|
| Nigel Grace | Project Manager/EOR, Well Construction Contract Services, Preconstruction/FDEP Coordination and Permitting, Post-Construction Operational Testing - Permitting | <10% |
| Celia Earle | Client Service Manager, SRF Assistance | <5% |
| Albert Perez | Principal-in-Charge | <1% |
| Gregg Jones | Quality Control/Technical Advisor | <2% |
| Matthew Schultz | Quality Control/Technical Advisor | <2% |
| David Holtz | Quality Control/Technical Advisor | <2% |
| Diego Herrera | Well Construction Contract Services -Preconstruction/Contract Closeout | <20% |
| Victor Hurlburt | Post-Construction Operational Testing - Design Support | <20% |
| George Bloom | Post-Construction Operational Testing - Planning/Design Support | <20% |
| Kenneth Hoff | Health and Safety | <1% |
| Christine Miranda | Well Construction Contract Services - SRF Assistance | <10% |
| Ravi Ravisangar | Post-Construction Operational Testing - Planning | <20% |
| Ruth Burney | Post-Construction Operational Testing - Design Support | <20% |
| Robert Hrabovsky | Structural | <5% |
| Robert Abordo | Electrical | <5% |
| Hector Serrano | Instrumentation | <10% |

**We are committed to the City of Hollywood and this project. The BC Team members presented for this project will be dedicated for the duration of this project.**

# Anticipated Municipal Staff Support Needed

**We are proud of the collaborative environment we have created with the City and look forward to continuing our partnership on this project. We have allocated adequate resources to provide full-service inspection and construction administration support for the implementation of this project.**

While our team resources will provide full-service inspection and construction administration, we will work collaboratively with the City to keep the City informed of progress, administrative and technical decisions and advice regarding all contract related matters that arise. On a routine basis, the following are areas the City is expected to support the effort:

1. Attend progress meetings
2. Process applications for payment
3. City administered contract administration
4. Process approved changes

# Integration of BC Team with City Staff

**BC believes that shared decision-making with our clients is a key component of integrating and building a team with City staff.**

### Frequent Communications

Maintaining frequent communication with the City is one of the strategies that quickly builds teamwork between the City and BC and integrates those members participating in the project. Communication can take many forms on projects, and we will use the methods preferred based on staff preferences. Regardless of the methods employed, frequent communication will be used by the BC Team to develop a unified team and to integrate all participants.

Communications with the City can take the form of formal or informal methods. BC proposes regular monthly status meetings with assigned City staff, the Project Manager, the Lead Hydrogeologist, the Client Service Manager, and any other persons the City may request from time to time. In addition to formal reports, more informal e-mails, phone calls, and meetings will be scheduled on an as-needed basis, upon either the request of the City or BC.

### Collaborative

Another successful strategy we employ for integration of the BC Team with City staff is shared decision-making.

Decision-making on a project can take place at all levels of management and vary in complexity and scope. One, to help integrate the City staff with the BC Team and to make sure that everyone has provided their input on that decision. Two, the best decisions are those that are reached by considering the viewpoints of a diversified group, which holds the interest of the City as the main objective. It has been proven that shared decision-making with our clients is a key component of integrating and building a team with City staff.

### Transparency

Transparency is a term that describes one of the key elements of the relationship between BC and the City. It is the last piece of the puzzle to cultivate and maintain an integrated team with the City staff. As you have experienced in the past, BC will only conduct itself in the most trustworthy and professional manner in all aspects of the project and will always provide all information related to the projects performed for the City. This is a key component of developing trust by all members of the team.

Section 5D

# Project Approach

# Project Approach

5D

## Delivery oversight you can trust

**Our project approach is the result of more than five years of planning, permitting, FDEP engagement and design development to bring the City of Hollywood a practical and sound solution for compliance.**

### Introduction and Understanding

As noted in an earlier Section, the BC Team has been working with the City on the preliminary planning and associated FDEP engagement and approval of all facets of the City's Ocean Outfall Legislation (OOL) compliance program. The proposed construction of two Class 1 injection wells and one dual zone monitoring well is a key element of the City's overall compliance program for which the BC Team provided permitting and design services as an extension of foundation work initiated about five years ago. **The BC Team brings the technical insights, momentum, team/stakeholder cohesion and readiness to rapidly mobilize with no learning curve** - benefits that have informed the development of a comprehensive project implementation approach that captures the key tasks and integrated schedule required for a successful project implementation.

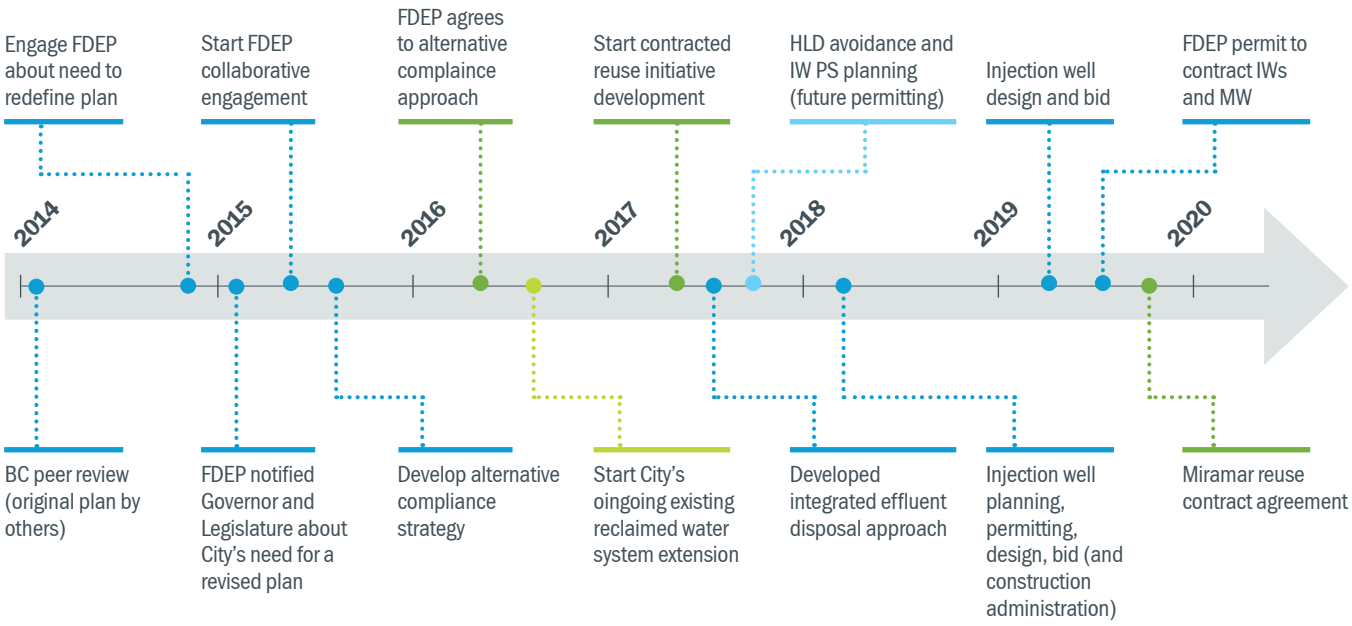
section overview

This section describes our approach to performing the work, including the team members roles in data gathering, data analysis and recommendation process.

### Selection Criteria

- ✓ Ability to Complete Project on Time
- ✓ Ability to Complete Project on Schedule

# BC Team's Historical Support of Hollywood's OOL Compliance Program Development




## Next Steps

| | A Contracted Reuse | B Actual Reuse | C Injection Well Construction | D Expanded Effluent Disposal Capacity |
|---|---|---|---|---|
| Remaining Items | • Obtain FDEP buy-in for 2 mgd credit<br>• Pursue other opportunities to expand to 4-5mgd | • Continue infrastructure expansion to connect new customers<br>• Secure adequate effluent supply from Davie/Cooper City in cooperation with the City | • Construct IW 3 & 4 and MW 2<br>• Implement supplemental improvement required for operational testing<br>• Apply for and secure operating permit | • Secure permit to construct effluent pump station without HLD<br>• Design and implement proposed pump station and energized systems |
| Challenges & Opportunities | • Demonstrate good faith efforts to achieve full goal<br>• FDEP approval of 2 mgd credit for Miramar<br>• Cost-effective reuse strategy | • Loss of existing golf course customers<br>• Equilization/ transmission capacity<br>• Supply of effluent of adequate quality<br>• Keeping FDEP informed about progress and challenges | • Timely completion<br>• Continuity with FDEP<br>• Lack of FDEP permit commitment to eliminate HLD is an ongoing risk<br>• Potential exists to accelerate commitment to HLD elimination | • Timely completion of permit to lock in HLD elimination – opportunity to bundle permit with supplemental piping improvements |
| Savings | **~$200 million saving** compared to plan by others | | **~$70 million additional savings** with HLD elimination (pump station permitting required to secure) | |

# Our Service Commitment to You

**For the past five years, we have collaborated with the City to develop a trusted solution to meet your compliance needs. Starting with the identification of potential risks, a previous plan posed to the City's water supply sustainability and progressing with early work to better define the underlying impacts of brackish water infiltration/inflow that was driving the direction of the City's early OOL compliance efforts, we worked collaboratively with the City to lay the path to this point. We are the only team who clearly understands the project history, goals, how this project integrates with the ultimate compliance strategy and potential risks.**

| PROJECT GOAL | BC TEAM SOLUTION | BENEFIT |
|---|---|---|
| Well construction, injection testing and project closeout should be completed by December 2022 (schedule goal) to allow adequate time for post-construction operational testing and operation permitting. | • The permitting and design team will provide continuity through construction and permitting phases.<br>• Conservative schedule development allows flexibility for compression and details critical coordination between BC Team and Contractor. | • Our intimate knowledge of project details will allow for rapid project start-up and expedited contract approval.<br>• Minimized opportunities for clarification delays and miscommunication of intent.<br>• Unified responsibility of design, permitting and construction oversight team.<br>• High confidence in successful delivery on time and within budget. |
| Post-construction operational testing and operation permitting must be completed by January 2024. | • Implementation of FDEP-required permanent wellhead systems must be coordinated with well construction and be in-place prior to initiating operational testing.<br>• Design and permitting of supplemental improvements will parallel well drilling effort and is scheduled for implementation immediately following the completion of well drilling and short-term injection testing.<br>• Operating permit application will be submitted six months after testing begins for timely permit approval. | • Complete operational testing and operating permitting within 5-year permit time period.<br>• Planning of permanent infrastructure creates opportunity for the City to obtain an additional permit for the permanent pump station improvements, thereby locking in a key benefit relative to high level disinfection (HLD) avoidance. |
| Seamless construction delivery approach with timely coordination with Contractor and FDEP. | • The demonstrated credibility and responsiveness of our lead hydrogeologist, David McNabb with FDEP and extensive experience with injection well construction administration will promote timely and effective decision making and approvals.<br>• Our schedule and resource allocation will be closely coordinated with the Contractor's schedule. | • No preventable delays incurred seeking and receiving FDEP approvals. Collaborative and productive engagement promotes confidence among all stakeholders.<br>• Timely availability of appropriate resources to project needs. |

## Proven Partnership. Trusted Solutions.

# Project Implementation Schedule

## Our preliminary schedule carefully considered engineer and contractor interaction and includes areas where time savings may be realized.

During the drilling of injection and monitoring wells, challenges may be encountered that could potentially impact the implementation schedule. Typical challenges that can have widely variable schedule impacts include:

1. Encountering poorly consolidated rock that collapses into the borehole – requires dredging
2. Loss of tools, drill pipe or casing down the borehole – requires "fishing" for removal
3. Encountering highly transmissive formation while cementing casing – extends cementing activity

Our proposed project implementation schedule anticipates typical setbacks and incorporates adequate durations to handle the typical situations that occur. Furthermore, the proposed implementation schedule shows the coordinated efforts of the BC Team from Notice to Proceed through approval of the Injection Well Operating Permit and the alignment of BC Team activities with key construction activities. A high-level overview of well construction activities are provided in the schedule further in this section. Typical details of anticipated installation sequences for injection and monitoring well construction are presented in Table 5D-1 below together with aligned tasks that will be performed by our field observation team.

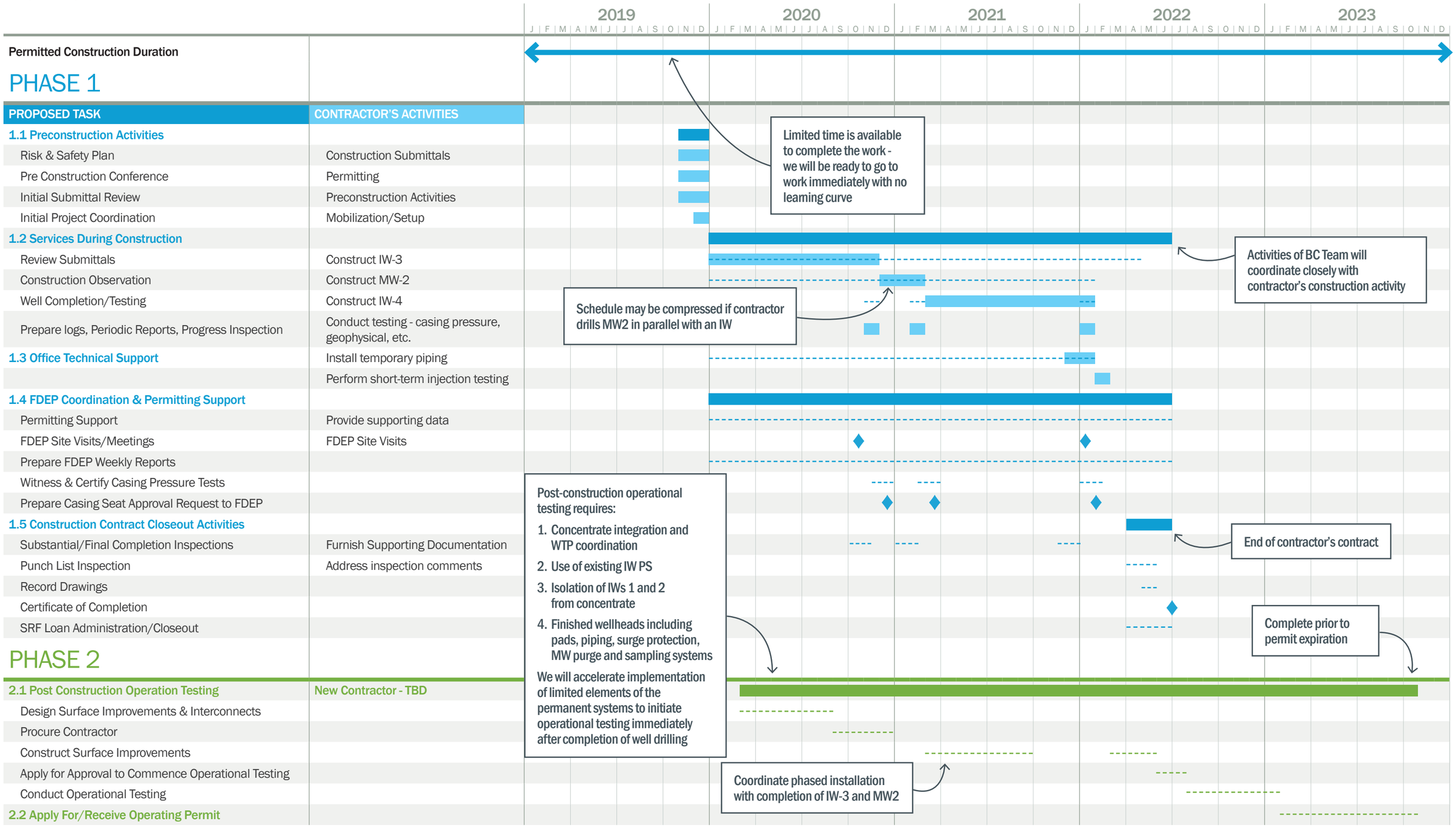
The schedule was developed using our knowledge of the project and anticipated components of the work that extend beyond the well drilling construction activities. A preliminary schedule, as well as major highlights, are presented on the next page. The preliminary schedule will be aligned with the Contractor's proposed schedule to meet all critical milestones and provides for coordinated implementation of supplemental improvements. Important highlights are annotated on the schedule and further summarized below.

1. The FDEP construction permit has an expiration date of January 30, 2024 by which construction and an operating permit must be obtained.
2. With the 840 days allowed by the construction contract, all well drilling and short-term injection testing should be completed by January 2022 following which activities associated with Phase 2 (operational testing and obtaining an operating permit) will be initiated. The BC Team is committed to delivering up to full-time on-site observation services during critical phases of construction activity.
3. FDEP requires permanent wellhead facilities be in place to initiate operational testing (which is different from short term injection tests performed by Contractor). Key elements include the ability to integrate concentrate into the effluent stream while maintaining isolation from the injection wells, permanent wellhead improvements inclusive of surge protection, metering, piping/valves and monitoring well operating elements. Consequently, additional improvements must be implemented prior to the start of operational testing.
4. Opportunities are available for schedule compression with the possibility of drilling the monitoring well in parallel with one of the injection wells.

**TABLE 5D-1. Anticipated installation sequences for injection and monitoring well construction**

| BC Team Observation Services | Well Construction Sequences (injection testing not included) | |
|---|---|---|
| | Injection Well (each) | Monitoring Well |
| | Mobilize and Setup Equipment | Mobilize and Setup Equipment |
| | Drill Pilot Hole, Geophysical Logs, Ream and Install 66-inch Casing to 225 ft | Drill Pilot Hole, Geophysical Logs, Ream and Install 34-inch Casing to 225 ft |
| • Construction observation<br>• Determine casing settings<br>• Prepare lithologic logs<br>• Well testing (various)<br>• Weekly Meetings<br>• FDEP site visits & coordination<br>• Determine completion zones<br>• Coordination | Drill Pilot Hole, Geophysical Logs, Ream and install 56-inch Casing to 900 ft | Drill Pilot Hole, Geophysical Logs, Ream and Install 24-inch Casing to 900 ft |
| | Drill Pilot Hole, Geophysical Logs, Packer Testing, Ream and Install 46-inch Casing to 1,500 ft | Drill Pilot Hole, Geophysical Logs, Packer Testing, Ream and Install 16-inch Casing to 1300 ft |
| | Drill Pilot Hole, Collect Cores, Geophysical Logs, Packer Testing, Ream and Install 36-inch Casing to 2,900 ft | Drill Pilot Hole, Geophysical Logs, Packer Testing, Ream and Install 6 -5/8-inch Casing to 1750 ft |
| | Geophysical Logs, Casing Pressure Test, Ream to 3,500 ft | Geophysical Logs, Casing Pressure Test, Background Sampling |
| | Install and Cement FRP to 2,890 ft, Geophysical Logs, Background Sampling | Install Wellhead |
| | Install Ball Valve and Blind Flange | |

# Project Schedule for the Construction Administration Services for the Drilling of Deep Injection Wells No. 3 and No. 4 and Monitoring Well No. 2




**LEGEND** Overall Task Duration for BC Team | Activity Duration for BC Team | Activity Duration for Contractor | Post-Well Completion Operational Testing Phase | Activity Duration in Support of Operational Testing

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# Proposed Project Tasks

**We have organized the project to provide the most efficient timeline with the least impact to the plant. Given our knowledge of the project requirements, our Team is best positioned to expedite the execution of an agreement with the City.**

## Phase 1 - Injection/Monitoring Wells Construction Activities

As noted previously, this phase includes all activities associated with the construction and testing of the proposed injection wells, monitoring well and temporary piping required to support short-term injection testing. Services include pre-construction activities, construction observation, office technical support, coordination of permit requirements with FDEP, and project closeout activities.

### Task 1.1 - Pre-construction Activities and Project Coordination *(estimated labor - 520 hours)*

a) Project Risk and Safety Planning

b) Pre-construction Conference

c) Project Coordination

### Task 1.2 - Services During Construction *(estimated labor - 10,700 hours)*

The BC team shall provide services during construction required to observe and document the progress of the work and provide contract administration responsibilities outlined below. This task is primarily focused on field elements of the construction activities and tasks associated with coordinating activities and communicating with the contractor and the City. The BC Team shall provide daily observation of well drilling activities on a 7-day per week basis for an average of 12 hours per day (for a combined total of 9,720 hours of inspection services). Observation shall continue for the entire duration of active well drilling activities, which is estimated to occur over a duration of 810 days (substantial completion; 840 days for final completion). Our staffing plan incorporates the flexibility to increase the daily site observation coverage at the City's option. Proposed activities include:

a) Review Contractor Submittals

b) Well Construction Observation

   i) Observe drilling/testing and review geophysical logs

   ii) Determining casing depths based on lithologic and geophysical logs.

   iii) Evaluate borehole deviation

   iv) Observe casing settings/grouting, quantities and critical calculations

   v) Determine and observe test conditions: casing, pressure, packer

   vi) Prepare lithologic descriptions.

c) Well Completion and Short-term Injection Testing

   i) Determine extent of confining and injection zones

   ii) Observe injection testing and evaluate results

d) Observe the construction of temporary surface improvements

   i) Piping and tie-ins to existing processes

e) Preparation of Logs, Periodic summary reports and progress inspections

   i) Underground injection control (UIC )Permit required reporting

   ii) Engineer of Record (EOR) inspections

   iii) Progress documentation

   iv) Bi-weekly progress meetings

### Task 1.3 - Office technical support services *(estimated labor - 300 hours)*

The BC Team shall provide office technical support on an as-needed basis for the review of submittals, project coordination, EOR inspections, evaluation of change requests, loan administration support, participation in periodic meetings and associated construction administration activities. Proposed activities include:

i) Requests for Clarifications (RFCs), pay applications

ii) Record drawings

iii) Coordination with plant operations

iv) SRF loan administration support

v) Bi-weekly progress meetings

vi) Troubleshooting support

vii) Evaluating requested changes

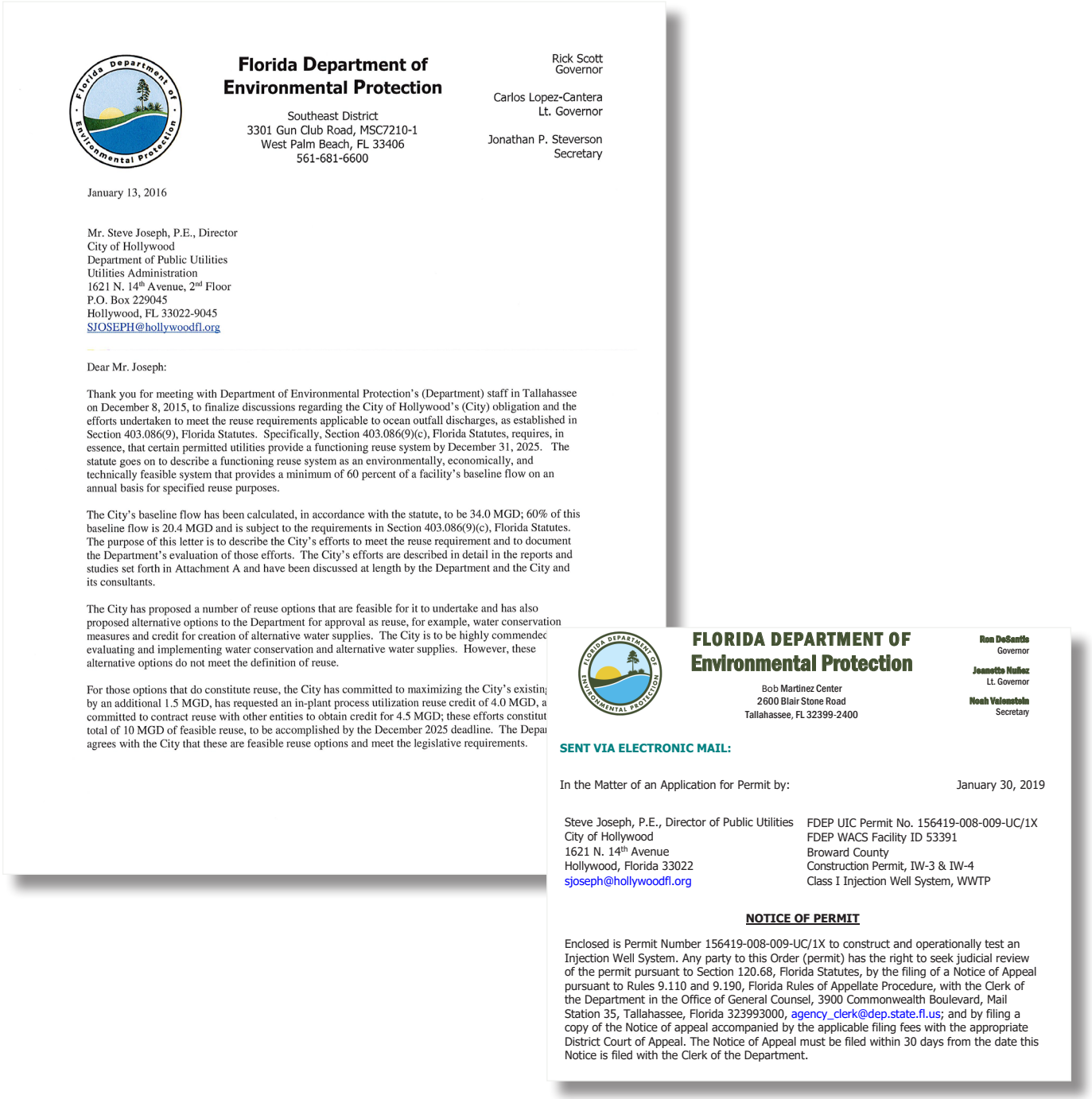
### Task 1.4 - FDEP Coordination and Permitting Support *(estimated labor - 1,100 hours)*

This task includes activities associated with coordination and periodic reporting to FDEP regarding well construction and testing results. The reporting requirements are aligned with requirements of the UIC Permit to Construct (Permit Number FL0026255). Onsite inspection by FDEP staff will be coordinated under this task. Coordination and engagement under this task is related to well construction and associated

# Proven Partnership. Trusted Solutions.

## BC is a Proven Partner to the City of Hollywood

When BC realized there was a potential alternative to the City's existing costly reuse compliance plan, Nigel Grace and members of the team worked diligently to get FDEP approval for a revised plan that saved the city more than $200 million. The plan was approved by FDEP and the construction permit issued in early 2019.



**Florida Department of Environmental Protection**

Southeast District
3301 Gun Club Road, MSC7210-1
West Palm Beach, FL 33406
561-681-6600

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

January 13, 2016

Mr. Steve Joseph, P.E., Director
City of Hollywood
Department of Public Utilities
Utilities Administration
1621 N. 14th Avenue, 2nd Floor
P.O. Box 229045
Hollywood, FL 33022-9045
SJOSEPH@hollywoodfl.org

Dear Mr. Joseph:

Thank you for meeting with Department of Environmental Protection's (Department) staff in Tallahassee on December 8, 2015, to finalize discussions regarding the City of Hollywood's (City) obligation and the efforts undertaken to meet the reuse requirements applicable to ocean outfall discharges, as established in Section 403.086(9), Florida Statutes. Specifically, Section 403.086(9)(c), Florida Statutes, requires, in essence, that certain permitted utilities provide a functioning reuse system by December 31, 2025. The statute goes on to describe a functioning reuse system as an environmentally, economically, and technically feasible system that provides a minimum of 60 percent of a facility's baseline flow on an annual basis for specified reuse purposes.

The City's baseline flow has been calculated, in accordance with the statute, to be 34.0 MGD; 60% of this baseline flow is 20.4 MGD and is subject to the requirements in Section 403.086(9)(c), Florida Statutes. The purpose of this letter is to describe the City's efforts to meet the reuse requirement and to document the Department's evaluation of those efforts. The City's efforts are described in detail in the reports and studies set forth in Attachment A and have been discussed at length by the Department and the City and its consultants.

The City has proposed a number of reuse options that are feasible for it to undertake and has also proposed alternative options to the Department for approval as reuse, for example, water conservation measures and credit for creation of alternative water supplies. The City is to be highly commended evaluating and implementing water conservation and alternative water supplies. However, these alternative options do not meet the definition of reuse.

For those options that do constitute reuse, the City has committed to maximizing the City's existing by an additional 1.5 MGD, has requested an in-plant process utilization reuse credit of 4.0 MGD, a committed to contract reuse with other entities to obtain credit for 4.5 MGD; these efforts constitut total of 10 MGD of feasible reuse, to be accomplished by the December 2025 deadline. The Depar agrees with the City that these are feasible reuse options and meet the legislative requirements.

**FLORIDA DEPARTMENT OF Environmental Protection**

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

**SENT VIA ELECTRONIC MAIL:**

In the Matter of an Application for Permit by: January 30, 2019

Steve Joseph, P.E., Director of Public Utilities
City of Hollywood
1621 N. 14th Avenue
Hollywood, Florida 33022
sjoseph@hollywoodfl.org

FDEP UIC Permit No. 156419-008-009-UC/1X
FDEP WACS Facility ID 53391
Broward County
Construction Permit, IW-3 & IW-4
Class I Injection Well System, WWTP

**NOTICE OF PERMIT**

Enclosed is Permit Number 156419-008-009-UC/1X to construct and operationally test an Injection Well System. Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 323993000, agency_clerk@dep.state.fl.us; and by filing a copy of the Notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

testing activities. Operational testing and operation permitting is included elsewhere under Phase 2 (post-construction operational testing). Proposed activitie include:

a) Participate in FDEP meetings
b) Prepare/Submit weekly reports to FDEP
c) Prepare/Submit Casing Seat Approval Request to FDEP
d) Casing pressure tests: witness and certify
e) Certify completion of injection wells and dual-zone monitor well (DZMW)

### Task 1.5 - Construction Contract Closeout Activities *(estimated labor - 100 hours)*

Following completion of construction, testing and required approval of FDEP submittals, project closeout activities will be initiated. Proposed activities include:

a) Substantial and final completion inspections
b) Punchlist inspections
c) Signed/Sealed Record Drawings
d) Prepare certificate of completion
e) FDEP SRF loan closeout support

## Phase 2 – Post-Construction Operational Testing and Associated Improvements

### Task 2.1 - Post-Construction operational testing and permitting

Once final completion of well construction is achieved (Task 1.4), Phase 2 activities will commence with the construction of supplemental improvements required to support the start of operational testing. This task will culminate in an approved operating permit for the injection well.

a) Coordination and controlled delivery and concentrate during testing phase without impacts to existing IWs 1 and 2
b) Develop test plan including a sequence of operation required to support testing
c) Meet with FDEP to review and secure approval of test plan
d) Coordinate operation with WTP for intermittent delivery of concentrate
e) Design and permit improvements required for integrating concentrate stream and permanent wellhead equipment (prior to completion of proposed IW pump station.
f) Oversee implementation of piping/wellhead improvements after the completion of well drilling activity
g) Initiate operational testing and performance data collection

### Task 2.2 - Application for an Operating Permit

a) Prepare and submit application after six months of testing
b) Respond to FDEP requests for clarification

**The BC Team is best positioned to rapidly negotiate Phase 1 services and move forward with no further delay to the start of construction activities**

# Project Management and Team Controls

## The BC Team will utilize our proven methods to be sure that this project meets all your objectives through our practice of regular communication, clear documentation and swift and proactive identification of issues before they arise.

BC has developed a project approach that supports our understanding of the needs and priorities for the City's Construction Administration Services for the Drilling of Deep Injection Wells No. 3 and No. 4 project.

The BC Team will be led by Project Manager, Nigel Grace, PE, who brings his in-depth, comprehensive knowledge of the City's processes, systems, and facilities combined with his depth and breadth of local wastewater and municipal utility experience. He brings more than 20 years of experience with the City. Nigel will be supported by team members you already know and trust from the initiation of this work that began five years ago. The Team presented are dedicated to the City and will remain committed throughout the duration of the project. As the BC Team's Project Manager, Nigel will be responsible for personally responding to the City's communications within 24 hours or assigning a key personnel delegate in his absence. Our project management approach has been demonstrated in our successful delivery of projects locally, around the state, and across the Country for over 70 years. Based on our **"listen first"** philosophy, it ensures that each project meets the City's goals and objectives. This consistency of approach is extremely beneficial to ensure quality delivery and adds accountability. Our approach is outlined in the five step process shown below.

**Nigel Grace, PE**
Project Manager/
Engineer of Record

- Knowledge of the City's processes, procedures and systems
- Clear reporting of budget & schedule performance
- Complete accountability
- Financial & resource balancing
- Strong proactive communication approach
- Continuous reporting on project status

### Project management and execution approach

The BC Team's project delivery approach emphasizes initial strategy development that is closely coordinated with Hollywood's stakeholders, our subject matter experts and the Contractor. This will refine and build consensus around the decisions that will guide the project through completion.

**1. Listen**

BC leadership confirms understanding of project scope, goals, key stakeholders, and critical success factors with the City.

**2. Engage**

Nigel engages the delivery team to align with the City's project goals, objectives, and critical success factors.

**3. Prepare**

Our Team will expedite refinement of the scope of services, budget, PMP, QA/QC Plan & Safety Plan and schedule.

**4. Execute**

BC Team uses internal tools and processes to execute the project, achieving stakeholder buy-in on critical decisions and delivering on schedule.

**5. Closeout**

Leadership and Team measure and celebrate success. Honest feedback and performance evaluation improve future project delivery.

**Our WorkSmart platform is the system that ties all the elements of our Project Management program together to yield consistent results that will surpass your expectations. Our project manager will manage the project using our internal WorkSmart program. WorkSmart simplifies, automates and coordinates project financials, schedule, the QA/QC process and invoicing. By integrating planning and tracking tools with relevant project requirements, WorkSmart helps project teams deliver projects on time, on budget and helps apply project management principles consistently across all projects.**

## BC's WorkSmart™ System Provides Project Controls

BC invested in and implemented a fully-integrated project delivery system called WorkSmart to simplify, automate, and coordinate project financials, schedules, QA/QC processes, and invoicing.


This system serves as a dashboard control tool, allowing our team to run queries and present data to the City of Hollywood on a real-time basis for any task at any time. Accessed via BC's company intranet, WorkSmart is a proprietary project management platform that integrates with our firm's accounting, staffing, and resource scheduling systems. This system is used by all BC project managers to implement the firm's best processes and practices across projects nationwide.

A single gateway through which all project attributes are entered and updated, WorkSmart employs an interactive web-based question and answer tool to identify requirements for independent reviews, QC checks, applicable BC standards, expert involvement, and more. Our project managers use this tool to document each project's characteristics, requirements, and critical success factors.

This system additionally provides a single location for reviewers to coordinate and collaborate with the project manager and team. Quality reviewers and other internal stakeholders have full access to create, submit, and modify new project-specific requirements throughout the life of the project. A notification system keeps the entire team up-to-date on changes and new requirements related to each project, providing an easy means to communication, which ensures a cohesive and successfully delivered project.

**BC's integration of planning and tracking tools with relevant project requirements through the WorkSmart platform allows BC project managers to deliver projects on time, within budget, and at a level of quality that exceeds client and industry standards.**

# Delivering Quality
# THE ESSENTIALS AT BC

### FOCUS
Our practice is exclusively environmental; we keep our business focused on what we know, and do best.

### PERSONAL RESPONSIBILITY
BC project managers are personally responsible for the quality of their work and for the success of project teams on which they collaborate.

### UNDERSTANDING OUR OBLIGATIONS
Quality begins with a clear understanding, and clear statement, of client needs and expectations, and of our specific contractual obligations.

### STANDARDS
Quality depends on sound application of industry and client standards, along with our own best practices.

### SAFETY
Our commitment to the safety of clients, employees and the public is an indispensable aspect of our quality program.

### THE QUALITY PROCESS
Understand and apply our project management system, WorkSmart. It addresses planning, budgeting, mobilizing technical resources, applicable tools and processes, key calculations and milestones, essential reviews and coordination checks, and team communications.

### TAKE INITIATIVE FOR IMPROVEMENT
Advance continuous improvement in the quality of our work. Encourage and ask questions, engage and leverage the expertise and guidance of senior staff across the company, pursue training opportunities, seek feedback from clients and share the positive and negative lessons learned from experience.

## Organizational and Project Approaches to Health and Safety

### "Always make health and safety a priority" is the #1 shared core value of BC and Hollywood.

Like the City, we make every effort to provide our staff with the skills, knowledge, and equipment necessary to protect them on the job. Our commitment to safety is not just rhetoric – it is the way we do business.

BC's health and safety program includes job-specific safety training, site-specific Safety Plans to identify and reduce potential hazards, and numerous resources and activities designed to increase awareness and responsibility for safety companywide.

We understand that excellence in safety performance and excellence in project delivery and execution are inter-related. Fundamental corporate behaviors that produce successful projects also lead to outstanding safety results. Our Safety Statistics beat the industry averages by a significant margin with an Experience Modification Rate (EMR) and Loss Time Incidence Rates (LTIR) that beat the industry averages by over 40% and 75% respectively.

BC is a five-time recipient of the National Safety Council's Industry Leader Award (2015, 2014, 2013, 2012, and 2010).

# Risk Management for Project Success

## Throughout project delivery, we will closely collaborate with the Contractor and the City's project team to proactively identify and mitigate risk that might adversely impact the schedule, budget, and quality of the project.

Key to this activity is the use of a risk register. A risk register is a living document that is continually reviewed and updated to reduce the risks for the City, stakeholders, community, and the environment throughout the project's delivery cycle.

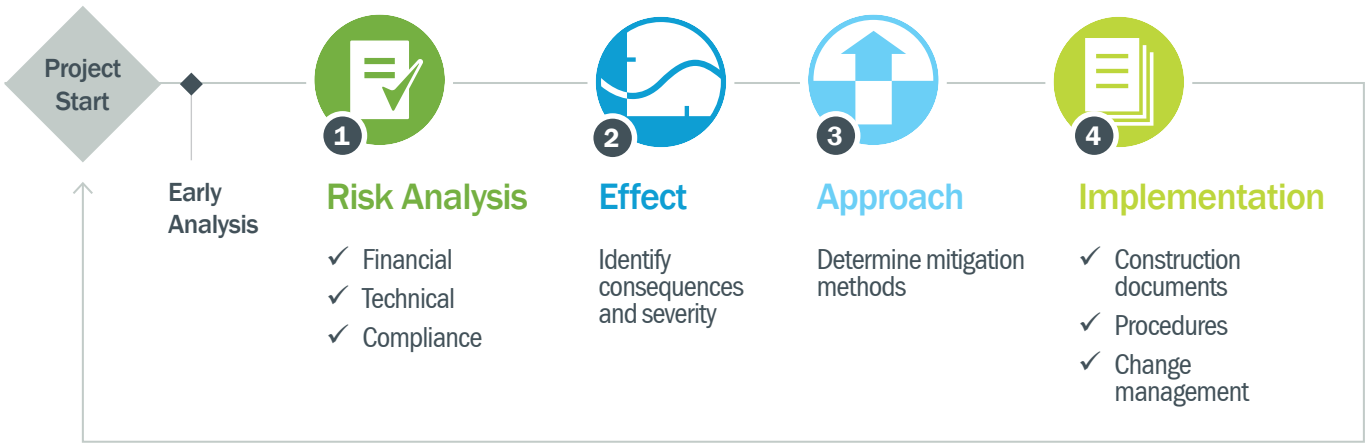
The risk register is a unique document in that it creates an opportunity to discuss potentially adverse situations from occurring and/or minimizes the impact. The risk registers will be updated for different phases of the project as well – the risks pertaining to Phase I will not be the same as the risks associated with Phase II. Key components of a risk register include:

- **Risk Identification.** Collaboratively identify risks and impacts throughout your project.
- **Mitigation Measures.** Define the BC Team's strategy for mitigating the risks.
- **Risk Register Maintenance.** Update and maintain the risk register throughout all phases of the project, clearly identifying which BC, City and Construction team member will be accountable for each risk.
- **Integration with the Construction Team.** Establish strong lines of communication with the Contractor and construction management team, where applicable.

Risk management discussions will be included in all meetings to identify construction risks early. The BC Team will help reduce risks during project delivery, drawing on our past work with the City, as well as our experience with similar projects.

The BC Team has proven that the benefits of having and using a risk register throughout the project often includes: adherence to schedule and budget, improved communication amongst team members and the City, reduction in change orders, increased collaboration amongst the City, design team, and construction team. Being proactive through the development of a project-specific risk register helps avoid unwanted cost surprises and delays in project delivery.

## Project Success is enhanced by our proven method of defining and controlling risks.



# Risk Register

**The drilling of injection wells is a complex process with potential pitfalls that can impact project success. Our in-depth knowledge of this project allows us to anticipate potential risks early to develop adequate mitigation strategies before they cause issues. A few of the potential challenges are outlined below.**

| Risk Potential/Impact | Potential Mitigation Action | Benefits |
|---|---|---|
| Delays due to dredging and/or retrieving tools lost down hole – excessive delays can impact construction schedule | • Build additional time into schedule to anticipate typical delays<br>• Work compression opportunities built-in to work through with Contractor | ✓ Maintain satisfactory completion on schedule while accommodating typical setbacks |
| Delayed completion of wells impact the start of post-construction improvements required for Operational Testing and obtaining an operating permit by January 2024 | • Work with FDEP to expedite key reviews/ approvals that can impact schedule<br>• Issue partial completion/acceptance of wells and implement phased improvements that do not interfere with well completion progress<br>• Apply for construction permit renewal (not preferred) | ✓ Minimize potential impact of significant schedule setbacks on overarching objective – provides feasible options to develop collaboratively with Contractor and City |
| Inability to construct permanent pumping/piping systems required to support post-construction Operational Testing | • Utilize existing pump station and implement piping/wellhead improvements that may be incorporated into the permanent facilities<br>• Supplemental improvements must commence immediately following construction of wells | ✓ Operational testing may commence shortly after completion of well construction and be completed within the 5-year permitted timeframe<br>✓ The permit to construct supplemental improvements may also include other improvements that would lock-in FDEP approval of integrated approach for effluent disposal |
| Improper demonstration of concentrate isolation from existing IWs limit the ability to start Operational Testing | • Initially operate proposed wells using only effluent until isolation is demonstrated to FDEP satisfaction.<br>• If leaky valves limit isolation, physically isolate impacted existing well and continue for the duration of Operational Testing<br>• Proactively identify scenarios and mitigation measures for review and feedback from FDEP well ahead of time in Operational Test Plan | ✓ Allows Operational Testing to be initiated and proceed with minimal scheduling impact |

Appendix A

# Resumes

# Nigel O. Grace, PE

## Experience Summary

Nigel Grace's experience covers several areas of environmental engineering for wide range projects spanning planning through design development and the delivery of construction administration across water, wastewater and reclaimed water service areas. His strengths lie in the diversity of his experience and problem-solving acumen that allows him to be very effective in areas of client advocacy dispute resolution and the development of technical solutions that are informed by a comprehensive perspective on influencing factors. He has served as an environmental consultant for 30 years of which, he has supported the City of Hollywood's diverse engineering needs for approximately 20 years during which he has taken on diverse challenges including master planning (water), diversifying the City's water supply with expansion into the Floridan Aquifer and implementation of reverse osmosis treatment, and led the planning and permitting efforts associated with the City's ongoing Ocean Outfall Legislation (OOL) compliance efforts.

**Assignment**

*Project Director/Manager*

**Education**

*M.E., Environmental Engineering, University of Florida, 1989*

*B.S., Chemical Engineering, University of Florida, 1986*

**Registration**

*Professional Engineer: 46605, Florida, 1992*

*Risk Assessment Methodology for Water (RAM-WSM℠), 2002*

**Experience**

*30 years*

**Joined Firm**

*2011*

**Relevant Expertise**

- *FDEP Engagement/Negotiation*
- *Water, Wastewater, and Reuse Systems Planning/Design*
- *Construction Contract Administration*

## Ocean Outfall Legislation Compliance Implementation

### OOL Compliance Planning and Permitting, City of Hollywood, Florida

**Project Director.** Projects included the following:

- Peer review of City's original FDEP approved compliance plan (2014)
- Conducted system assessments to determine compliance limitations and alternative approaches to meeting intent of the legislation (2014 - 2015)
- Engaged FDEP for recurring review of alternative approaches and feedback. This led to FDEP determination that the original plan was infeasible and approval of an alternate plan that provided for a practical and cost- effective path to reuse compliance (2015 – 2016).
- Supported City's evaluation of Contracted Reuse opportunities and development of an agreement with the City of Miramar (2016 - 2019)
- Developed integrated strategy for disposal of fluid residuals that provided for co-disposal of effluent and concentrate and set the stage for eliminating the need for high level disinfection (HLD) as part of City's planned injection well expansion efforts to comply with OOL requirements (2017).
- Periodically prepare OOL Compliance Status Reports for submission to FDEP (2016 – 2019)
- Permitted two industrial Class 1 injection wells and one dual zone monitoring well. Negotiated operating arrangement with FDEP that allowed for approval of a permit that eliminated the need for HLD (2018 – 2019)
- Completed design of proposed injection/monitoring wells and bid support services (2019)

### North Regional WWTP Reclaimed Water Plant Expansion, Broward County Water and Wastewater Services, Florida

**Quality Assurance Manager (design phase).** Provided overall technical review and led quality assurance efforts for this $54 million reuse plant expansion (construction is underway).

## Construction Administration & Related Activities

Provided construction administration support for several projects of diverse characteristics ranging from the installation of new wells to the implementation of major treatment upgrades. He has also provided independent Owners advisory and representative services for the construction

delivery contracts. The following is a representative list of typical construction projects supported in varied roles ranging from Project Engineer to Project Director:

**Design-Build Construction Owner's Advisory Services, Miramar, Florida**
Provide overall leadership for the delivery of advisory support to the City in the ongoing water treatment improvement that will replace an existing facility with a membrane treatment process. Services include the review of design documents, contractor's guaranteed maximum price, startup and transition plans, periodic inspections, progress meeting participation and closeout services.

**Floridan Wellfield Expansion, City of Hollywood, Florida**
Provided project direction leadership during the construction of four Floridan Aquifer wells.

**South District WWTP High Level Disinfection (HLD) Independent Advisory Assessment of Construction Delays, Miami-Dade Water and Sewer Department, Florida**
Led response to an FDEP required assessment of the cause for delays in consent ordered construction of a $600million HLD process at the South District WWTP. Assessment focused on the construction schedule, critical milestones and factors contributing to delays, and an evaluation of options to expedite the implementation of HLD. Based on the assessment and recommendations, FDEP granted a 30-month project completion time extension.

**Hialeah WTP Filtration System Improvements, Miami-Dade Water and Sewer Department, Florida**
Designed and oversaw implementation of improvements to filtration system at the Hialeah WTP (65 mgd).

**Springtree WTP Expansion, Sunrise, Florida**
Lead Design Engineer and construction administration for a 12/ 28-mgd plant expansion.

**District 1A WTP Stand-by Generator, Broward County WWS, Florida**
Led design and construction administration of standby generator at District 1A WTP.

**System 8 WTP Construction and Start-up Services, Palm Beach County, Florida**
Provided construction administration, startup and operator training services for an ozonation facility.

**Process Upgrades, City of West Palm Beach, Florida**
Directed design and construction administration upgrades to the City's 47 mgd surface water treatment facility. Constructed improvements included upgrades to chemical feed systems, coagulation, filtration, disinfection processes, hydraulic bottlenecks and control systems.

**Water Treatment Facility Rehabilitation and Pretreatment Upgrades, North Miami Beach, Florida**
Served as Project Director for design and construction of upgrades to the 32 mgd Norwood WTP that was required to address source water vinyl chloride contamination as well as the replacement/renewal of aging and inefficient elements of the facility.

**Springtree Wellfield Rehabilitation and Capacity Uprating, Sunrise, Florida**
Comprehensive condition assessment of wellfield and development of rehabilitation program.

**Preston Water Treatment Plant, Miami-Dade Water and Sewer Department, Florida**
Directed an independent assessment of construction status, basis for delays and developed corrective guidance for critical $25 million upgrades to the Preston WTP that successfully averted contractor default.

# David McNabb, P.G.

## McNabb Hydrogeologic Consulting, Inc.

### Project Related Experience

**McNabb Hydrogeologic Consulting, Inc. (2006-present)**
**President/Hydrogeologist-** Provide hydrogeologic consulting services exclusively for deep injection well systems design, permitting, testing and construction administration services.

**City of Hollywood Southern Regional WWTP Deep Injection Wells Design and Permitting** – Provided design and permitting services for the deep injection well system at the City's Southern Regional WWTP. The design includes two 3,500-foot-deep Class I deep injection wells with a 36-inch diameter final casing and 24-inch diameter FRP injection tubing. The injection wells were successfully permitted as Class I Industrial injection wells which saved the City significant capital funds by avoiding WWTP improvements which would have been required if the wells had been permitted as Class I Municipal injection wells.

**Florida Power & Light Turkey Point Exploratory/Injection Well** – Provided design, permitting and construction administration services for a 3,230-foot-deep exploratory well and dual-zone monitor well at the FPL Turkey Point site. The wells were constructed to Class I injection well standards with a 24-inch diameter final casing and 18-inch diameter FRP injection tubing. Provided permitting services for the conversion of the exploratory well to a Class I deep injection well. Assisted FPL in the preparation of injection well system (12 injection wells and 6 dual-zone monitor wells) construction schedule.

**City of Lake Worth Class I Industrial Deep Injection Well System** – Provided design, permitting and construction administration services for a 3,300-foot-deep injection well system for disposal of reverse-osmosis concentrate. The well is used for disposal of reverse-osmosis concentrate.

**Florida Power & Light West County Energy Center Deep Injection Well System** – Provided design, permitting, construction administration and expert witness services for the deep injection well system at the FPL West County Energy Center. The system consists of two Class I deep injection wells constructed to a depth of 3,400 feet and a dual zone monitor well. The wells were completed with a 20-inch diameter final casing and 16-inch diameter FRP injection tubing. Also provided mechanical integrity testing and injection well system permit renewal services.

**City of West Palm Beach Dual-Zone Monitor Wells** – Provided construction administration services for construction of three 2,300-foot deep dual-zone monitor wells associated with the Class I deep injection well system at the East Central Water Reclamation Facility. The project included the plugging and abandonment of three monitoring tubes that are no longer in service.

**Florida Power & Light Okeechobee Clean Energy Center Deep Injection Well System** – Provided design, permitting, construction administration and reporting services for the deep injection well system at the FPL Okeechobee Clean Energy Center. The system consists of two Class I deep injection wells constructed to a depth of 3,200 feet and a dual zone monitor well. The wells were completed with a 24-inch diameter final casing and 18-inch diameter FRP injection tubing.

**Okeechobee Utility Authority Deep Injection Well** – Served as the project manager for construction administration services for construction of a 3,200-foot deep Class I deep injection well and associated 2,000-foot-deep dual-zone monitor well at the Cemetery Road Wastewater Treatment Plant.

**Fort Pierce Utilities Authority Water Treatment Facility Industrial Deep Injection Well IW-2** – Provided consulting services for design and permitting of Class I Industrial deep injection well IW-2 at the Authority's Water Treatment Facility.

**Imperial Irrigation District Deep Injection Wells** – Provided construction oversight services for construction of two 2,750-foot deep Class I deep injection wells at the El Centro Generation Center in El Centro, California.

**Martin County Utilities North W/WWTF Dual-Zone Monitor Well** – Provided design, permitting and construction administration services for construction of one 2,229-foot deep dual-zone monitor well associated with the Class I deep injection well at the North Water/Wastewater Treatment Facility. The project included the plugging and abandonment of two monitoring tubes that are no longer in service.

**Port St. Lucie Injection Well Systems** – Provided regulatory compliance assistance for each of the City's deep injection well systems. Services provided included operating permit renewals and mechanical integrity testing of the City injection well systems. Additional services included plugging and abandonment of the Northport WWTP injection well system, acidization of the Glades WWTP injection well, and repair of the JEA WTP injection well.

# David McNabb, P.G.

## McNabb Hydrogeologic Consulting, Inc.

**LBFH, Inc. (2003 – 2006)**
**Hydrogeology Manager**
Hydrogeology manager focused primarily on deep injection well, Aquifer Storage and Recovery (ASR) well, and production well design, permitting and construction management projects. Duties included groundwater-related project business development and project management for deep injection well, shallow injection well, aquifer storage and recovery well, and production well projects.

**Martin County Tropical Farms Class I Industrial Deep Injection Well System** – Project manager for the design, permitting and construction administration services for two Class I Industrial deep injection wells used for disposal of reverse osmosis concentrate and treated wastewater.

**City of Belle Glade** - Provided mechanical integrity testing engineering services for the Belle Glade wastewater disposal deep injection well. Provided monitor well repair engineering services for the City's dual-zone monitor well. Repair included installation of an FRP liner after the lower monitor zone steel casing had developed holes due to corrosion.

**Arcadis, Inc. (2002 – 2003)**
**Deep Injection Well Services Program Manager**
Served as the firm's program manager for deep injection well design, permitting, and construction oversight projects. Duties included project business development for deep injection well projects. Additional responsibilities included technical quality control of Groundwater Program projects.

**CH2M HILL, Inc. (1995 – 2002)**
**Project Manager and Hydrogeologist**
Was responsible for managing projects involving siting, design, construction oversight, testing, and obtaining permits for deep injection wells and ASR wells. Work included siting and design of injection wells and ASR wells, preparation of Florida Department of Environmental Protection (FDEP) injection well permit applications and responses to requests for information, development and interpretation of deep injection well and ASR well construction and testing programs, preparation of construction contract documents and management of well construction contracts. Other responsibilities included providing resident observation services during well construction and testing, and preparation of well construction completion reports. Communication with clients and contractors was an integral part of the responsibilities.

**City of Boynton Beach Injection Well Retrofit** – Served as project manager for the design, permitting, services during construction and reporting for the modification of the City's injection well. The project included installation of a 12-inch diameter FRP liner inside an existing Class I injection well with a 16-inch diameter final steel casing.

**City of Key West** – Project manager of a $4.8 million deep injection well facility. Responsibilities included design of the injection well facility, preparation of permit applications, management of field personnel, communications with the FDEP, and management of the budget for the project. The project was completed under budget and on schedule. Also prepared the FDEP-approved plugging and abandonment plan for a 2,000 foot deep exploratory well located approximately 1 mile from the injection well site.

**Florida Department of Environmental Protection, Underground Injection Control (1992-1995)**
**Professional Geologist**
Responsibilities included the review and evaluation of Class I and Class V injection well and ASR well permit applications and proposed well construction and testing plans. Also responsible for reviewing well construction and testing engineering reports, weekly construction progress reports, monthly operating reports, and performing annual inspections of Class I injection well facilities. Interaction with consultants and key utility staff were instrumental in resolving regulatory issues.

**Mobil Oil Corporation (1987-1992)**
**Exploration Geologist**
Was responsible for conducting large-scale regional geologic studies to assess the hydrocarbon potential of numerous Mesozoic rift basins. Also conducted short-term and long-term mapping projects for much of Southeast Asia and South America, using conventional and computer-aided design.

**Education**
1985, B.S. Geology, Indiana University
1991, M.S. Geology, University of Texas at Arlington

Vice President

# Celia D. A. Earle, PhD

## Experience Summary

Dr. Celia Earle is a degreed environmental engineer, environmental chemist, and microbiologist, and thus has a unique profile in the environmental arena. She has a breadth of knowledge that includes planning, design, and construction administration for water, wastewater and reclaimed water systems, non-revenue water reduction and management, energy efficiency assessments, condition assessments, compliance assessments, program management, design-build delivery and RFQ development, vulnerability and emergency response assessments, public engagement programs, preparation of grant applications and various feasibility studies and investigations. She is a Local Leader who manages the Broward County office and has responsibility for business development and project delivery. She is recognized as a dedicated leader in her South Florida community, an avid advocate of the engineering profession, and a proactive, involved citizen. She is a member of engineering organizations and has made mentoring young engineering professionals her personal mission.

**Assignment**

*Client Service Manager/SRF Assistance*

**Education**

*PhD Environmental Chemistry University of Florida*

*MS Environmental Engineering University of Florida*

*BS Environmental Engineering University of Florida*

*BS Microbiology & Cell Sciences University of Florida*

**Certifications**

*Fundamentals in Engineering (FE)*

*Certified CSI Construction Document Technologist (CDT)*

*Risk Assessment Methodology for Water (RAM-W$^{SM}$)*

**Experience**

*26 years*

**Joined Firm**

*2011*

**Relevant Expertise**

- *Wells*
- *Wastewater*
- *Construction Administration*
- *Permitting*

### Class I Injection Well System IW-3 & IW-4 FDEP Construction Permit, City of Hollywood, FL

**Reviewer** for the development of the Permit Application to construct and operationally test the Class I Injection Well System IW-3 & IW-4. The injection wells for the disposal of secondary treated domestic wastewater from the City of Hollywood Southern Regional Wastewater Treatment Plant and reverse osmosis concentrate from the City of Hollywood Water Treatment Plant. The maximum disposal volume is 19.92 mgd. The permit was issued on January 30, 2019 and expires on January 30, 2024.

### Class I Injection Well System IW-3 & IW-4 Contract Documents and Bid Services, City of Hollywood, FL

**QA/QC** for the development of the contract documents for the Class I Injection Well System IW-3 & IW-4, as well as the preparation of the addendum during bid phase.

### Class I Injection Well System IW-3 & IW-4 Assistance with State Revolving Funds (SRF) Application, City of Hollywood, FL

**Project Director** for the development of the responses in the SRF Application.

### Deep Injection Well Project, City of Miramar, FL

**Field Engineer** responsible for supervision of the drilling of two deep wells for wastewater injection from the City's wastewater treatment plant. Duties also included sampling and analyses of monitoring wells.

### Design for District 2 Wells 8 and 9, Broward County Water and Wastewater Services, FL

**Project Manager** responsible for the development of Contract Documents for the replacement of wells 8 and 9. This also included design of monitoring wells, permitting services, and bidding services.

### Investigation and Rehabilitation of District 2 Wells 8 and 9, Broward County Water and Wastewater Services, FL

**Project Manager** responsible for evaluation of historical water quality data and physical characteristics for the two wells; raw water quality monitoring for parameters including Giardia, Cryptosporidium, MPA, and bacteriological speciation; variable flow testing; transient water quality evaluation; post-investigation disinfection; investigation of the source of contamination; and recommendations for additional rehabilitative measures to provide fully functional wells.

### Springtree Biscayne Aquifer Well Rehabilitation, City of Sunrise, FL
**Project Manager** for evaluation of the Springtree wellfield, to determine the approach to be used for increasing the wellfield's yield. This included well performance testing, development of a hydraulic model and basis of design report (BODR), and preparation of specifications for the acidization and testing of the wells.

### Floridan Wells, City of Sunrise, FL
**Project Manager** for review of existing design of two Floridan wells, development of a groundwater model for potential locations, evaluation of the deep injection well system, and siting and design for future Floridan wells.

### Water Resources Regional Wellfield Operation and Maintenance Plan, Broward County Water and Wastewater Services, FL
**Project Manager** responsible for establishment/documentation of baseline water quality and physical characteristics for individual wells; transient water quality variability during startup/shutdown of individual wells; an operating strategy for the raw water system that will attempt to balance the competing preferences of large users; assessment of possible causes for the elevated turbidity and development of a suitable plan for the initial purge and follow-up monitoring/flushing; and development of a maintenance plan aimed at maintaining the efficiency of the well fields, equipment mechanical integrity and water quality characteristics.

### North Regional WWTP Reclaimed Water Plant Expansion, Broward County Water and Wastewater Services' (BCWWS), Broward County, Florida
**Project Director** responsible for the BODR, detailed design, bidding and permitting services, and engineering services during construction for the expansion of BCWWS' existing reclaimed facility to increase its firm rated capacity from 10 mgd to approximately 26 mgd. This project is a result of the Ocean Outfall Legislation. The expansion will treat secondary effluent to meet High Level Disinfection (HLD) standards as defined by the Florida Department of Environmental Protection (FDEP). The proposed expansion is estimated at $53 million construction cost and includes construction of a new filter feed pump station, additional filters, chemical storage and feed, chlorine contact basins, reclaimed water pump station, electrical power distribution and requisite back-up emergency power. Additional elements include integration of existing/aging infrastructure with proposed infrastructure, maintenance of operations during extensive electrical/structural/process tie-in, design process to handle wide-ranging operating conditions from startup to buildout, and coordination between BCWWS operations and engineering teams and eight subconsultants working on various elements.

### Water Use Permit Modification, City of Sunrise, FL
**Project Manager.** BC assisted the City of Sunrise in obtaining an updated Water Use Permit for their groundwater supply. The purpose of this application was to request a modification of Water Use Permit No. 06-00120-W for the City of Sunrise (City). The City requested a 20-year permit duration for a raw water allocation of 15,962 million gallons per year (MGY) annually and 1,501 maximum million gallons per month (MGM). The project included gaining additional Biscayne Aquifer capacity by strategically using reclaimed water, additional Floridan aquifer capacity, evaluation of groundwater withdrawal impacts, developing operational/rotational schedules for well fields, and submitting a permit application and Basis of Review report to the South Florida Water Management District.

### Funding Review, City of Miramar, FL
**Deputy Project Manager** responsible for assessing the City's monetary needs, evaluating various funding vehicles, and providing recommendations.

### Vulnerability Assessment Grant Preparation, Confidential Client, North Miami Beach FL
**Project Manager** responsible for development of a USEPA grant application package for the City's Water System Vulnerability Assessment study. This grant application resulted in the City being awarded $115,000.

### Grant Preparation, City of Pompano Beach, FL
**Project Manager** responsible for preparation of three South Florida Water Management District (SFWMD) grant applications for alternative sources of water. Expansion of the existing reclaimed water treatment plant for future residential use and installation of reclaimed water mains in residential areas would decrease potable water utilization. These three applications resulted in the City being awarded approximately $1 Million.

## Experience Summary

Mr. Perez is a progressive and visionary leader with over 25 years of experience in the water and wastewater business sector. Mr. Perez is a business manager with strong technical and financial competencies, and a demonstrated track record of leading large organizations. He is an experienced consultant with keen business acumen and a proven track record in utility management consulting, business development, program management, water and wastewater project delivery, and construction administration.

Prior to working with Brown and Caldwell, he served in the capacity of Utilities Director for the City of Hollywood, where he was responsible for the administration of the Southern Regional Wastewater Treatment Plant which provides wastewater service to several cities within Broward County. In his capacity as a utility administrator he has been directly involved in the implementation of large capital improvements projects including the development of key programmatic elements such as development of funding plans and alternative project delivery. Mr. Perez has been intimately involved in various regional initiatives of importance within Broward County including his role as chair of the Broward County Water Task Force Technical Team, and also direct involvement with Broward County and Miami-Dade County in a multi-year effort to address changes to Senate Bill (SB) 1302 also known as the Ocean Outfall Legislation. In addition to his experience in the area of utility administration, he has also been involved in the delivery of various projects throughout South Florida.

**Assignment**

*Principal-in-Charge*

**Education**

*B.S., Civil Engineering, Florida International University*

**Registration**

*Professional Engineer, Florida*

**Experience**

*25 years*

**Joined Firm**

*2012*

**Relevant Expertise**

- *Utility Management Consulting*
- *Operations Performance Management and Optimization*
- *Capital Improvements Planning*
- *Alternative Project Funding Strategies*
- *Utility Master Planning*
- *Strategic Planning for Business Development*
- *Program Management*
- *Construction Management*

### Ocean Outfall Legislation – Reuse Compliance Strategy, City of Hollywood, Florida

**Principal-In-Charge.** Development of an integrated Ocean Outfall Legislation strategy that has resulted in agreement on a feasible reclaimed water compliance approach that leverages contracted reuse opportunities and maximizes the use of effluent that is not impacted by brackish groundwater influences. Working closely with the City and FDEP, the aquifer recharge element of the original plan was eliminated and the actual reuse to be implemented was limited only to the amount determined to be technically, environmentally and economically feasible. The City has realized an estimated cost savings of approximately $200 Million from its baseline plan of approximately $300 Million.

### Potable Water Main Replacement Projects, City of Hollywood, Florida

**Principal-In-Charge.** Design, permitting, and construction management services for water distribution system improvements for approximately 29,000 linear feet of new potable water main. A second project that is in process involves the surveying, geotechnical investigations, design, permitting, bidding, and limited construction administration services for the replacement of approximately 60,500 linear feet of water mains.

### Distribution System Water Quality Improvements, Hollywood, Florida

**Principal-In-Charge.** The City of Hollywood had observed declining chlorine residuals along the north part of the barrier island during its routine water sampling activities. The source of the issue was identified, immediate actions were recommended, and longer-term solutions were proposed.

### North Regional WWTP Reclaimed Water Plant Expansion, Broward County Water and Wastewater Services' (BCWWS), Broward County, Florida

**Principal-In-Charge.** BCWWS' existing reclaimed facility to increase its firm rated capacity from 10 mgd to approximately 26 mgd. This project is a result of the Ocean Outfall Legislation. The expansion will treat secondary effluent to meet High Level Disinfection (HLD) standards as defined by the Florida Department of Environmental Protection (FDEP). The proposed expansion is estimated at $53 million construction cost and includes construction of a new filter feed pump station, additional filters, chemical storage and feed, chlorine contact basins, reclaimed water pump station, electrical power distribution and requisite back-up emergency

power. Additional elements include integration of existing/aging infrastructure with proposed infrastructure, maintenance of operations during extensive electrical/structural/process tie-in, design process to handle wide-ranging operating conditions from startup to buildout, and coordination between BCWWS operations and engineering teams and eight subconsultants working on various elements.

### Pump Station Improvements Program, MDWASD, Miami, Florida

**Accountable Approver.** A program for compliance with an EPA Consent Order to bring the sewer pump stations into regulatory compliance. The program involved EPA Consent Order, program management, wastewater pump station design.

### Studies and Reports, General Engineering Services, Broward County Water and Wastewater Services (BCWWS), Broward County, Florida

**Principal-In-Charge.** BC currently has a General Engineering Contract with BCWWS for Studies and Reports. Studies performed under this contract have included surveying, septic elimination, alternatives for intracoastal crossing, basis of design reports (BODRs), collection system modeling, and numerous others.

### General Engineering Services, Sunrise, Florida

**Principal-In-Charge.** BC currently has a General Engineering Contract with the City of Sunrise. Projects performed under this contract include a comprehensive Reuse Plan that will allow the City to more efficiently use their existing Biscayne aquifer supply, and multiple projects at the Sawgrass WWTP, including: headworks improvements, high-level disinfection facilities, and an aeration system efficiency study.

### Infrastructure R&R Improvements and Asset Management Program, Orange County, Florida

**Principal-In-Charge.** Continuing services contract to establish a R/R program strategy for wastewater collection, water distribution and reclaimed water infrastructure. Scope includes evaluating the entire system and assisting the County to develop the strategy to make key decisions about which assets to rehab/replace and when and apply available funding to meet system needs. Services including condition strategic planning and utility performance consulting, assessments, evaluation, recommendations for improved processes and procedures, data management and tracking, R&R prioritization, and preliminary design.

### Water and Wastewater Master Plan, City of West Palm Beach, Florida

**Principal-In-Charge.** Developed a comprehensive Water/Wastewater Master plan that models the City's systems and prepares a Capital Improvement Plan that includes deferred asset maintenance and repairs, as well as new infrastructure needed to serve the community for the next 20 years. This Plan is unique in that it fully integrates the CIP scheduling process with a rate model to assign and demonstrate financial feasibility for all projects – not only capital needs, but the associated O&M requirements for existing and future projects.

### Sawgrass Wastewater Treatment Plant (WWTP) Headworks Upgrades, Sunrise, Florida

**Principal-In-Charge** for the upgrade to the Headworks at the 15mgd (ADF), 42 mgd (PHF) Sawgrass WWTP. The upgrade consists of the replacement of existing screening systems with three perforated plates screens, new screenings compactors, replacement of mechanical equipment for the vortex degritting systems, new flow splitting systems for the aeration basins feed and new odor control collection and treatment systems for the headworks area.

### Asset Management Program, City of West Palm Beach, Florida

**Principal-In-Charge.** The City of West Palm Beach Public Utilities Department manages, operates and maintains a 55 mgd Wastewater Treatment Plant, a 47 mgd Water Treatment Plant, over 1,000 miles of water and sewer mains, and 125 lift stations. The City contracted with BC to embark on the development of an Asset Management Program with a vision to develop an effective asset management organization that reduces the life cycle cost and impacts of asset ownership and enhances customer service through: Effective and Efficient Processes, Enhanced Systems, Highly Trained and Motivated Staff, and Commitment to Continuous Improvement. Specific tasks to be accomplished include: Assessment of Existing Asset Management Practices and Improvement Plan, Assessment of Information Systems (including Datastream CMMS), Establishment of an Asset Management Steering Committee, Asset Management Training Sessions, and Improvement Plan Implementation.

# Gregg W. Jones, PG, PhD

## Experience Summary

Dr. Gregg Jones has 32 years of experience in numerous water resource disciplines including hydrogeology, hydrology, water quality, geochemistry, and water supply and water conservation planning. His diverse public and private-sector experience ranges from hands-on technical work to high-level water policy development to the oversight of large technical departments. He has excellent written, verbal, and public communication skills and specializes in presenting complex technical information to non-technical audiences. He is a recognized expert in karst geology and spring systems of the southeastern U.S. and has extensive experience in groundwater-quality monitoring and analysis.

**Assignment**

*Quality Control/Technical Advisor - Hyrdrogeology*

**Education**

*PhD, Geochemistry, University of South Florida*

*MS, Hydrogeology, Geophysics, University of South Florida*

*BS, Geology, Florida Atlantic University*

**Registration**

*Professional Geologist, Florida*

**Experience**

*32 Years*

**Joined Firm**

*2018*

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

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

### Water Supply Plan, Withlacoochee Regional Water Supply Authority, Lecanto, Florida

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

### Water Resource Assessment, Suwannee River Water Management District, Live Oak, Florida

**Water Resources Technical Director** Assessed the effects of projected groundwater and surface water withdrawals on proposed and established minimum flows and levels for lakes, wetlands, streams, and springs. The assessment included an evaluation of all potential sources in the District that could provide water for various users and the development of project concepts to utilize those sources.

### North Area Water Supply Environmental Impact Statement, US Bureau of Reclamation, Bismarck, North Dakota

**Water Resources Technical Director** Assessed the ground and surface water resources of northwest North Dakota and conducted an alternatives analysis to determine the water supply potential of numerous aquifers and the Souris River. Assessed the reliability of the river to supply water to recharge water supply aquifers in the region and completed a feasibility analysis that determined the costs of the recharge facilities.

### Upper Santa Fe River Basin Water Resources Assessment, Suwannee River Water Management District, Live Oak, Florida

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

### General Electric vs. the Saratoga County Water Authority, Saratoga County, Saratoga County, New York

**Technical Advisor.** As part of litigation over PCB contamination of the Hudson River, provided extensive analyses on the availability and quality of Hudson River water and the factors involved in determining the water supply withdrawal location and distribution system configuration. Provided expert witness testimony during a deposition.

### Recovery Strategy for the Northern Tampa Bay and Southern Water Use Caution Areas, Southwest Florida Water Management District, Brooksville, Florida

As director of the Water Resource Assessment Department, Dr. Jones worked as part of the executive team at the District to formulate recovery strategies for areas where excessive groundwater withdrawals had caused rivers and springs to cease flowing, lakes to dry up, and saltwater to intrude into coastal aquifers. The strategies involved regulations to roll back groundwater withdrawals; incentives such as funding to develop surface water and reclaimed water to replace groundwater, and conservation to increase the efficiency of water use by agricultural and public supply users. Dr. Jones conducted extensive outreach to educate groups of stakeholders on the need for the recovery strategy and to solicit their input on proposed solutions. He presented regularly to local governments, elected officials, and the District's Governing Board to brief them on the status of the effort.

### Evaluation of Saltwater Intrusion in Aquifers in the Coastal Regions of Florida, Georgia, South Carolina, North Carolina and Virginia, Northwest Florida Water Management District, Havana, Florida

As manager of the Water Quality Monitoring and Analysis Program at the District, led efforts to determine the cause of rapidly increasing nitrate levels in five major spring and river systems. Responsible for the establishment of river sampling stations and monitor well networks, analysis and mapping of aquifer flow systems, sampling of rivers, springs and wells for a comprehensive list of water quality parameters, analysis of water quality trends and relationships, inventories of nitrate sources and loading assessments in the recharge area, identification of travel times and nitrate sources using isotopic ratios, and development of strategies to reduce nitrate levels.

### Development of an Untreated Aquifer Storage and Recovery (ASR) System, City of North Port, Florida

**Project Director.** Working with a team of hydrogeologists and engineers to develop an untreated ASR system to provide potable water to residents of the City of North Port. The system, which is currently in the cycle testing phase, is designed to capture urban stormwater runoff in the wet season, provide only minimal filtration, followed by injection and storage in a saline portion of the Floridan aquifer. The project involves water use and Underground Injection Control (UIC) permitting, monitor and ASR well design and construction, and cycle testing oversight

### Development of an Aquifer Recharge System, Confidential Client, Southeast Orlando, Florida

**Project Director.** Developing an aquifer recharge system that will be used to supply a city-size development with water for landscape irrigation. The development is located in the Central Florida Water Initiative area where permits for new quantities of groundwater, especially for landscape irrigation, are very difficult to obtain. The team must develop an innovative system that will capture and inject minimally treated surface water into the upper Floridan aquifer during the wet season and recover it for irrigation use during the dry season. The project is currently in the permitting phase and will eventually require groundwater modeling, monitor and production well construction and testing, and cycle testing.

### Aquifer Recharge Program, Southwest Florida Water Management District, Brooksville, Florida

**Director** of the Water Resource Assessment, Led a team of hydrogeologists and engineers who worked closely with university researchers, the Florida Department of Environmental Protection, the U.S. Geological Survey, and private sector experts to identify and solve problems that inhibited the development of aquifer storage and recharge. The team also worked with local governments to fund, plan, construct, and test aquifer storage and recharge projects.

# Matthew Schultz PE, PMP

## Experience Summary

Mr. Schultz has 18 years of experience in the design, construction, commissioning, and optimization of water and wastewater treatment plants, pipelines, and large pumping systems. His recent experience has included the front-end project delivery planning, alternatives analysis, design-builder and contractor evaluation and selection, and general program and project management. Mr. Schultz has extensive experience in alternate delivery projects including design-build, progressive design-build, and construction manager at risk. He also has experience in the instrumentation and control design of water and wastewater treatment facilities.

**Assignment**

*Quality Control/Technical Advisor - Construction*

**Education**

*BSME – University of Denver*

*BSEE – University of Denver*

**Registration**

*Professional Engineer – FL & CO*

*PMI Project Management Professional*

**Experience**

*18 Years*

**Joined Firm**

*2018*

**Relevant Expertise**

- *Large Diameter Pipelines*
- *Large Pump Stations*
- *Design/Build Delivery*
- *Advanced Water Treatment Facilities*
- *FPL Cooling Water Facilities and Pipelines*
- *OSHA 30*

### Facilities Expansion Program, Cape Coral Utilities Department, Cape Coral, Florida

**Supervising I&C Engineer.** The Facilities Expansion Program, Wastewater, consisted of six Construction Manager at Risk projects totaling $375M in total construction value ($18M in I&C), including two wastewater reclamation facility expansions, one new wastewater reclamation facility, one new sludge drying facility, two new master pump stations and a new operations and maintenance facility. As the lead I&C engineer Mr. Schultz provided instrumentation and control expertise during pre-design and detailed design phases, and supervised on-site inspections and testing during the construction phase.

### Pump Stations G-370 & 372, South Florida Water Management District, West Palm Beach, Florida

**Project Engineer.** For this large construction project Mr. Schultz provided construction management and inspection services for control and electrical systems of two 900 MGD pump stations for the South Florida Water Management District's (SFWMD) Everglades Revitalization Project. Responsibilities included control system factory acceptance testing, electrical inspections and testing, calibration testing of instrumentation, loop testing, functionality testing of control system hardware and software and electrical and instrumentation punch list development. The project won the American Council of Engineering Companies Grand Conceptor Award in 2005.

### FPL Reclaimed Water Facility Upgrades, City of West Palm Beach Water Utilities, West Palm Beach, Florida

**Owner's Representative.** Mr. Schultz oversaw design and construction of a $2M Design-Build contract to provide improvements to the FPL Reclaimed Water Facility that treats and delivers cooling water to FPL's West County Energy Center. Improvement included a storage tank bypass, additional pumping capacity, and other miscellaneous upgrades which required close coordination with FPL's WCEC operations during scheduled outages.

### Reclaimed Water Pipeline to the Ballpark of the Palm Beaches, City of West Palm Beach Water Utilities, City of West Palm Beach, Florida

**Owner's Representative.** Mr. Schultz oversaw design and construction of a 2 mile, 12" HDPE reclaimed water pipeline that delivers reclaimed water to The Ballpark of the Palm Beaches – the newly constructed spring training facility for the Houston Astros and Washington Nationals. The project included three horizontal direction drill crossings of canals and roadways.

### SDS Raw Water Pump Stations, Colorado Springs Utilities, Colorado Springs, Colorado

**Project Manager.** As part of the program management leadership team, Mr. Schultz developed the Progressive Design-Build delivery strategy for the

$110M raw water pump station component of the SDS Program that included an option to convert to a traditional Design-Bid-Build delivery should favorable market conditions exist. After managing the project through design and permitting, the Design-Build contract was terminated and the construction was hard bid to prequalified construction contractors. Through construction, Mr. Schultz performed as the Construction Manager, administering and managing one $80M construction contract, one $6M engineering contract, and fifteen separate 3rd party testing contracts. He also managed a team of twenty construction professionals across three separate construction sites. The raw water pump station project was completed on scheduled in 2015 and finished $10M under budget.

### SDS 66" Raw Water Pipeline, Colorado Springs Utilities, Colorado Springs, Colorado

**Design Manager.** Mr. Schultz provided design oversite and review of the raw water pipeline projects which included approximately 50 miles of 66" buried steel pipe with epoxy coating and cement mortar lining. The total project value of the raw water pipeline projects was over $300M, delivered in multiple Design-Bid-Build and Design-Build contracts.

### SDS 50 MGD Water Treatment Plant, Colorado Springs Utilities, Colorado Springs, Colorado

**Design Manager.** Mr. Schultz provided design oversite and review of a new 50 MGD surface water treatment plant, including flocculation/sedimentation basins, ozone contactors, GAC filters, and future provisions for UV reactors. The $145M project was delivered using a Progressive Design-Build methodology.

### Prairie Waters Conveyance System, Aurora Water, Aurora, Colorado

**Startup Manager.** As the Startup and Commissioning Manager, Mr. Schultz managed field testing and startup activities for 40 miles of 54" buried steel pipe and three inline pump stations, conveying raw water from the South Platte River via surficial wells to a new water treatment plant.

### Biosolids Improvement Project, West Palm Beach Water Utilities, City of West Palm Beach, Florida

**Project Manager.** Mr. Schultz managed construction and engineering tasks for the $120M Biosolids Improvement Project at the East Central Regional Water Reclamation Facility, which includes six new sludge digesters, centrifuge sludge dewatering, septage and FOG receiving, and aeration basin

David Holtz is co-founder of Holtz Consulting Engineers and helps oversee the management of the company and execution and quality control for capital improvement project for numerous public utilities in Southeast Florida. He has over 30 years of comprehensive water, wastewater and reclaimed water engineering experience in Florida with significant experience with deep injection wells and has been the Engineer of Record for numerous significant utility improvement projects.

## Deep Injection Well Experience

**Port St. Lucie Northport WWTP Site Injection Well Plugging and Abandonment –** Mr. Holtz worked with McNabb Hydrogeological Consulting (MHC) on the project to plug and abandon the old, unused deep injection well at the site of the decommissioned Northport WWTP, which now is the location of a master booster wastewater pump station. Mr. Holtz was the Engineer of Record for the deep well plugging and abandonment plan submitted to FDEP and assisted in preparation of the design documents depicting the work to plug and abandon the well and make miscellaneous site improvements.

**Port St. Lucie James E. Anderson, Southport and Westport Mechanical Integrity Tests –** Mr. Holtz worked with McNabb Hydrogeologic Consulting to assist the City of Port St. Lucie with the performance of mechanical integrity testing for three deep injection wells. The deep well systems were located at a wastewater treatment plant, a wastewater master repump facility, and a water treatment plant. The work included the preparation of the MIT plan and technical specifications, assistance with contractor selection, MIT field services, and preparation of MIT testing reports.

**Martin County Utilities Tropical Farms and N. W/WWTP Deep Injection Well Permitting and Improvements –** Mr. Holtz assisted with the development of a repair procedure for a leak in the deep injection well packer at the base of the injection tubing for Injection Well No. 2 (IW-2) located at the MCU North Water/Wastewater Treatment Plant in Jensen Beach FL. HCE conducted site visits and meetings with the FDEP UIC and procured a permit for the repair. HCE and MHC performed construction oversight during the repair. HCE also designed, bid, and provided construction assistance for the replacement of valves and piping and the well head as well as the replacement of 12-inch, 16-inch, and 20-inch pipe transferring water to IW-2.

Mr. Holtz also helped replace two monitor tubes with a dual-zone monitor well at the North WWTP. The work included the design, permitting, bidding, and construction oversight and monitoring. The dual-zone monitor well was designed to utilize existing shallow groundwater pad monitor wells and an existing concrete containment slab. Value engineering was performed with the contractor and owner. The existing monitor tubes were abandoned after the new monitor well was placed into service.

Mr. Holtz also assisted with the renewal of the FDEP operating permits and mechanical integrity testing for one deep well at the North WWTP and two deep wells at the Tropical Farms WWTP.

**ECRWRF Deep Injection Well Mechanical Integrity Testing and Monitor Well Replacement** Mr. Holtz assisted the East Central Regional Water Reclamation Facility with the performance of mechanical integrity testing for seven deep injection wells. The work included the preparation of a plan and technical specifications, assistance with contractor selection, MIT field services, and preparation of MIT testing reports.

Mr. Holtz also helped replace an existing dual-zone monitor well with a new lower-zone monitor well for Injection Well IW-2. The work included the design, permitting, bidding, and construction oversight and monitoring. The lower-zone monitor well was designed to utilize two existing shallow groundwater pad monitor wells.

Mr. Holtz was Project Director for the expansion of the plant from 55 to 70 mgd, including new 700-Hp effluent pumps and a 26-inch deep injection well and associated dual-zone monitor well, including a new hydropneumatic tank for surge suppression.

Mr. Holtz conducted an evaluation of the accurate effluent disposal system capacity, including injectivity testing of the 7 wells and hydraulic

modelling of the pumping and piping system. Mr. Holtz helped with the re-rating of the injection wells from a maximum injection velocity of 8 feet per second to up to 10 fps to restore the plant's rated effluent disposal capacity.

**FPL West County Energy Center Deep Injection Well System –** Mr. Holtz worked with MHC as Engineer of Record for the design, permitting, testing, and construction oversight for one exploratory well, two deep injection wells, and a dual-zone monitoring well at the West County Energy Center (WCEC). The deep injection wells are used as a means of disposing of cooling water from the three electrical production units located at the WCEC. The exploratory well was constructed first to confirm the geology at this site was conducive to deep-well injection. The exploratory well was converted to an injection well and a second injection well and dual-zone monitoring well were constructed adjacent to the initial well. HCE designed and oversaw the construction of the well heads, containment pads, surge tanks, and other appurtenances, as well as being the Engineer-of-Record for the deep well system.

**Fort Pierce Utility Authority Island Water Reclamation Facility Injection Well Permitting and Improvements –** Mr. Holtz provided engineering support to MHC for providing professional services for mechanical integrity testing (MIT) of the deep injection wells at the FPUA Island Water Reclamation Facility (IWRF) and the Henry A. Gahn Water Treatment Facility and dual-zone monitor wellhead replacement at the IWRF. The project included the preparation and submittal of a MIT plan for each injection well, preparation of technical specifications, bid services, field services during testing of the wells and preparation of reports providing an interpretation of the testing results. HCE also assisted with engineering services for the replacement of the corroded wellhead at the IWRF with new stainless steel wellhead, pumps, and instruments.

Mr. Holtz also assisted with a project to replace the existing Venturi insert flow meter on the wellhead with a new magnetic meter during mechanical integrity testing at the IWRF, and re-coat the wellhead and remove and replace damaged concrete at the penetration of the casing through the concrete slab.

**Seacoast Utility Authority Wastewater treatment Plant Improvements –** Mr. Holtz assisted with mechanical integrity testing and renewal of the operating permit for the deep injection well system at the PGA Wastewater treatment Plant. He also assisted with replacement of the dual-zone monitor well at the site after the existing lower-zone casing failed. Mr. Holtz was project manager for the construction of a lined storage pond, gravity conveyance system and pump station for management of reject water not suitable for beneficial off-site reuse or deep well injection to comply with the Deep Well Rule.

## Education

Bachelor of Science in Environmental Engineering, University of Florida, 1985

Masters of Engineering in Environmental Engineering, University of Florida, 1987

## Registration

Professional Engineer, Registration No. 42595, Florida

## Professional Affiliations

Board Certified Environmental Engineer, American Academy of Environmental Engineers

Project Manager

# Diego M. Herrera, P.E.

## Experience Summary

Diego Herrera has over 15 years of experience in project management, and civil and environmental design for water and wastewater projects in the public and private sector. Projects involved contract preparation for study and analysis, design, QA/QC, value engineering, permitting, bidding, construction administration, startup, and operation and maintenance. Mr. Herrera's primary areas of expertise include: preparation and permitting of water supply plans, master plans, reports for municipalities; planning and design of raw water collection wells and water treatment plant improvements, water distribution systems, rehabilitation of storage facilities, permitting, and construction oversight; analysis and planning of reuse water processes and design of reuse water distribution systems, permitting and construction oversight; study and analysis, planning and design of wastewater collection systems and pumping stations (low-pressure, vacuum, and conventional gravity), permitting, and construction oversight. Additionally, he has experience in design-build projects. He has successfully completed over 100 wastewater collection systems, pumping stations, and existing wastewater systems evaluations; over 50 raw water collection and water treatment plant processes evaluations, and water distribution systems; and over 20 projects involving reuse water study and analysis, reuse water treatment plant evaluations and upgrades, and reuse water distribution systems.

**Assignment**

*Well Construction Contract Services – Preconstruction/Contract Closeout*

**Education**

*B.S., Civil Engineering, Military School of Engineering AJS*
*La Paz, Bolivia*

**Registration**

*Professional Engineer #73143, Florida, 2011*

*ASCE Broward Branch, 2011*

**Experience**

*15 years*

**Joined Firm**

*August 2017*

**Relevant Expertise**

- *Water/Wastewater/Reuse Systems*
- *Drinking Water*
- *Pumping Systems*
- *Project Management*
- *Storm Water Analysis*

### Deep Injection Wells No.3 and No.4 Design, City of Hollywood, Florida

**Design Manager.** Preparation and design manager of deep injection wells No. 3 and No.4 inside the City's wastewater treatment plant. Project included evaluation of materials and appurtenances best suited for City personnel use, bidding, and permitting. Project will increase capacity to discharge combined blended concentrate effluent from City's WTP and treated wastewater effluent from City's WWTP. This also permitting with the FDEP for a construction permit, as well as bidding services.

### Replacement of Wellheads 5, 6, 8R, Coral Springs, Florida

**Design Engineer.** Design of 3 raw water wellheads and coordination of the installation of 3 new raw water supply wells for the City of Coral Springs' service area to supply the main water treatment plant. This project allowed the City to regain 3,000 GPM of raw water flow to meet potable water demand of residents.

### Watermain Replacement Program – Johnson Street and Hollywood Blvd., Hollywood, Florida

**Project Manager/Design Manager**. Administration and design of approximately 56,000 LF of water mains including 350 LF of directional drilling under Hollywood Blvd.

### Watermain Replacement Program – Sheridan Street and Taft Street, Hollywood, Florida

**Project Manager/Design Manager**. Administration and design of approximately 20,000 LF of water mains.

### Rehabilitation of Lift Stations 114, 123, 125, 132, and 148, Sunrise, Florida

**Construction Engineer.** Construction oversight for the rehabilitation of 5 lift stations. Coordination of electrical, coatings, install of new valve vaults, and civil site improvements.

### Rehabilitation of Lift Stations 117 and 307, Sunrise, Florida

**Construction Engineer.** Construction oversight for the rehabilitation of 2 lift stations. Coordination of electrical, coatings, install of new valve vaults, and civil site improvements.

### Sanitary Sewer System for the SW Corner of 10th Avenue North and Kirk Road, Village of Palm Springs, Florida
**Project Manager/Design Manager.** Planning and design of a gravity sewer system comprised of approximately 10,500 LF of sanitary sewer pipes, one pump station, and 3,000 LF of sewer force main.

### Rehabilitation of Lift Stations 14E, 17A, 17C, and 18C, Coral Springs, Florida
**Design Engineer.** Design of 4 lift stations totaling a combined pumping rate of approximately 2,000 GPM. The new pump stations were equipped with telemetry units and SCADA systems. The project also included the modeling of proposed pumping rate impacts on the existing sewer system and proposed upgrades to different locations in the City's system to allow for the increase of pumping flow.

### Southwest Quadrant Downtown Water and Sewer Improvements, Coral Springs, Florida
**Design Engineer.** Design of a gravity sewer system, water mains, force mains, and one lift station for the new City of Coral Springs Downtown Redevelopment Area. The associated sewer system will be able to provide service to approximately 900 multifamily units and about 82,00 SF of new retail buildings. The water main was designed to be 12-inch in diameter with a total length of 1,200 LF.

### Water Treatment Plant Improvements – Phase II, Coral Springs, Florida
**Design Engineer.** Supported in the design of different improvements in the City's water treatment plant. Modeling of WTP pressures and flows in conjunction with raw water system. Project included the design and construction of a new filter backwash supply pump station, on-site process water distribution system modifications, rehabilitation of pre-aeration towers, replacement of filter effluent transfer pumps, clearwell assessment and demolition, emergency sludge lagoon assessment and repair, and storm water management planning.

### Rehabilitation of East Booster Station, Coral Springs, Florida
**Design Engineer.** Rehabilitation of one of the City's booster stations that included replacement of split case high service pumps, new pressure sustaining valves additions to existing ground storage tanks, upgrade of existing building to house crew during emergency operations, electrical modifications and instrumentation add-ons, overall site upgrades, and addition of a new wastewater grinder station.

### Rehabilitation of East Booster Station, Coral Springs, Florida
**Design Engineer.** Rehabilitation of the second of a total of 3 City's booster stations that included replacement of split case high service pumps, pressure sustaining valves additions to existing ground storage tanks, upgrade of existing building to house crew during emergency operations, electrical modifications and instrumentation add-ons, and overall site upgrades.

### Water Treatment Plant Clearwell Addition, Tamarac, Florida
**Design Engineer.** Project included the demolition of the existing clearwell and the design of a new clearwell for the City of Tamarac. The design included modeling other WTP elements to be interconnected with the new clearwell. Design and modeling of filter effluent transfer pumps and filter backwash pumps.

### Water Treatment Plant Washwater Recovery Basin, Tamarac, Florida
**Design Engineer**. Addition of a new washwater recovery basin to the existing WTP. This project included the design of 2 lift stations with submersible pumps for the removal of lime sludge and the transfer of washwater recovery.

### Pompano Beach Reuse Water Master Plan Update, Pompano Beach, Florida
**Design Engineer.** Preparation of the Pompano Beach Reuse Water Master Plan Update included the evaluation of current and future reuse water flows within the Pompano Beach reuse area. Master Plan included possible increase of the reuse area. Evaluation of current systems and expansion of the reuse plant.

## Experience Summary

Mr. Hurlburt brings over 45 years of experience in the study, design, permitting, construction administration, and resident engineering of various potable water transmission, distribution, supply and treatment projects, reclaimed water transmission projects, wastewater collection, transmission and treatment projects, and underground storage tank projects. He has completed numerous water and wastewater projects as well as plant startup and pilot plant operations in the U.S. and Puerto Rico. His water treatment experience includes conventional lime softening as well as membrane softening, reverse osmosis and ozone technologies.

He was also responsible for business development activities associated with acquiring engineering services contracts with municipal (City and County) clients and State agency clients within Florida for the disciplines of water and wastewater.

**Assignment**

*Post-Construction Operational Testing – Design Support*

**Education**

*BS (Civil Engineering) 1970; University of Vermont, Burlington, Vermont*

**Registration**

*Professional Engineer, Florida License #33836*

**Experience**

*46 years*

**Relevant Expertise**

- *Project Management*
- *Design and Permitting*
- *Construction Administration*
- *Marketing / Business Development*

### Well Pump Design for Florida Aquifer Wells No. 6 and 7, City of Hollywood, FL

**Project Manager.** Project manager for design of well pumps and appurtenances (precast concrete vault, valves and piping) for previously constructed casings for raw water wells no. F-6 and F-7 drilled into the Floridan Aquifer.

### Raw Water Transmission Main from Floridan Aquifer Wells, City of Hollywood, FL

**Project Manager.** Project manager for design and permitting of 20-inch diameter raw water main from the raw water wellfield (Floridan Wells F-6 and F-7) to convey raw water to the City's water treatment plant. The construction (open cut) was performed by City staff and a separate specialty subcontractor was hired to perform the construction of the directional drilled segment crossing NW 35th Avenue.

### Floridan Aquifer Test Well, City of Hollywood, FL

**Project Manager.** Assisted in the design development, permitting and construction management of a Floridan aquifer test well for use as a potable water supply at the City's water treatment plant.

### Raw Water Pipe Replacement Project, City of Hollywood, FL

**Project Manager.** Project manager for the design and construction phase services for the replacement of the exposed, above ground segment of 24-inch and 36-inch diameter stainless steel raw water supply piping, valves and flow meter supported on existing pipe support system located on the water treatment plant property. The project also included improvements to the sulfuric acid storage and delivery system.

### Central Water Treatment Plant Deep Injection Well for Membrane Softening Concentrate Disposal – Construction Management, City of Plantation, FL

**Project Manager.** Responsible for construction management of a deep injection well for concentrate disposal, associated with the 12-mgd membrane softening water treatment plant.

### Central Water Treatment Plant Deep Injection Well Testing and Permitting, City of Plantation

**Project Manager.** Project manager for five-year mechanical integrity testing (MIT) and operational permit application submittal for concentrate deep injection well for the City's membrane softening water treatment plant (Central WTP).

### Water Supply and Transmission System Improvements, City of Hollywood, FL

**Project Manager.** Responsible for construction administration and resident engineering for installation of three raw-water supply wells and the associated raw-water transmission mains to the City's water treatment plant.

### Groundwater Remediation at Ft. Lauderdale's Executive Airport Raw Water Wellfield, City of Fort Lauderdale, FL

**Project Manager.** Responsible for construction administration, resident engineering, and operations manual development for 2-mgd packed aeration column for removal of groundwater VOC contamination at the City's raw-water wellfield located on the Executive Airport property.

### Design and Construction Phase Services for VOC Removal Project at Norwood-Offler WTP, City of North Miami Beach, FL

**Deputy Project Manager.** Deputy project manager for the design and construction phases for tray aerators for VOC removal, as well as the associated yard piping, chemical treatment, raw water well rehabilitation and a dedicated transfer pump station. The project also included rehabilitation of the two existing clarifier access walkways/bridges, a new segment of raw water main piping to feed the tray aerators, and replacement of the existing lime slurry system with a new quick lime feed system.

### Evaluation of Heathrow WTP Raw Water Wells, Lake Mary, FL, Seminole County, FL

**Project Manager.** Project manager for evaluation of long-term disposition of Heathrow WTP and associated raw water wells. Recommended conveyance of raw water from wells at Heathrow WTP to Markham Regional WTP and the abandonment of the Heathrow water treatment facility.

### Various Wastewater Treatment Plant Design and Modification Projects, City of Hollywood, FL

**Project Manager.** Responsible for miscellaneous modification and expansion design projects including permitting for the wastewater treatment plant and associated sewage pump stations to include an odor control system, clarifier replacement equipment, sludge thickening modifications and polymer system installation.

### Potable Water Main Replacement Project, City of Hollywood, FL

**Design Manager.** Responsible for the design, permitting and project management of the potable water main replacement project area bounded by Sheridan Street, Pershing Street, N. 22nd Avenue, and N. 24th Avenue. The length of new potable water main is approximately 29,000 linear feet of 4-inch, 6-inch and 8-inch diameter PVC piping, with the purpose of this project being replacement of existing undersized water mains.

### Potable Water Main Replacement Project, City of Hollywood, FL

**Design Manager.** Responsible for the design, permitting and project management of the potable water main replacement project area bounded by Hollywood Boulevard, Johnson Street, State Road 7, and 52nd Avenue. The length of new potable water main is approximately 60,500 linear feet of 4-inch, 6-inch, 8-inch, 12-inch and 16-inch diameter PVC piping, with the purpose of this project being replacement of existing undersized water mains.

### Potable Water Main Replacement Project, City of Hollywood, FL

**Design Manager.** Responsible for the design, permitting and project management of the potable water main replacement project area bounded by Taft Street, Sheridan Street, North 26th Avenue, and North 28th Avenue. The length of new potable water main is approximately 19,400 linear feet of 4-inch, 6-inch, and 8-inch diameter PVC piping, and an aerial segment of steel pipe on the Sherman Street bridge over the C10 Canal, with the purpose of this project being replacement of existing undersized water mains.

### Sewage Force Main, City of Miramar, FL

**Project Manager.** Project manager for design and permitting (FDOT, FDEP, and Broward County agencies) of five miles of combined 24-inch and 30-inch diameter sewage force main along major roadways in Miramar.

### Design and Construction 36-inch and 42-inch Sewage Force Main for CONSERV I Flow Diversion, City of Orlando, FL

**Project Manager.** Project manager for study, design, permitting (SJRWMD, FDEP, FDOT and Orange County) and construction administration services of a phased (Phase 1 and 2) 8.5 miles segment of 36-inch, 42-inch, and 48-inch diameter sewage force main with numerous trenchless technology crossings of roadways and waterways. Project limits were from the intersection of Grant Street and SR436 to MH444 in Dean Road just north of the Econolochatchee River.

# George Bloom, PE

## Experience Summary

A successful senior engineer with project management and engineering experience in the planning, permitting, evaluation, design, construction and startup of wastewater collection, transmission and treatment facilities.

**Assignment**

*Post-Construction Operational Testing – Planning and Design Support*

**Education**

*BS, Environmental Science, Cornell University*

**Registration**

*Professional Engineer, Maine*

**Experience**

*38 years*

**Relevant Expertise**

- *Project Management*
- *Planning*
- *Permitting*
- *Evaluation Design*
- *Construction and Startup of Wastewater Collection*
- *Transmission and Treatment Facilities*

### SDWWTP Projects ST1B and 2A, MDWASD, Miami, Florida

Quality Control Reviewer for headworks improvements, new oxygenation trains and upgrade of existing oxygenation train designs.

### CDWWTP Project CT3C, MDWASD, Miami, Florida

**Design manager** on replacement of the primary power distribution system at the CDWWTP. Project components include design of two new electrical distribution buildings each containing ten Tier 4 generators, fuel storage and handling facilities, electrical distribution system including new duct banks to existing and proposed substations.

### WRNWWTF Facility Planning – Treatment Alternative Evaluation and R&R Needs Assessment, Palm Beach County, Florida

**Design lead** on identification of hydraulic and treatment limitations of existing facilities and evaluation of alternatives for eliminating identified limitations. Oversaw a R & R assessment of existing equipment, systems and unit operations identifying and prioritizing improvements for addressing R & R needs.

### Sawgrass Train A Secondary Treatment Design, City of Sunrise, Florida

**Design Technical Advisor** for the replacement of multi-stage centrifugal blowers and the electrical equipment for the original Train A treatment system.

### NYC Department of Environmental Protection, Bureau of Engineering, Design and Construction

**Chief Process Mechanical Engineer.** Design manager and process design lead on the Level 1 BNR upgrade for the 110 MGD Coney Island WPCP. Review of BEDC in-house design projects and consultant designed projects including the 37 MGD Hannah Street PS, Rikers Island PS, 5 MGD Port Jervis WPCP BNR Upgrade and 45 MGD Rockaway WPCP BNR upgrade. DSDC manager for the 310 MGB Newtown Creek WPCP TRC project. Member of DEP Design Guideline Development Committee.

### Bion Technologies, Inc.

**Chief Engineer.** Management oversight of project planning, design, construction management, start-up of waste treatment system production facilities. Participated in the development of a low oxygen, simultaneous nitrification-denitrification BNR system for use on high strength waste streams. Evaluated process equipment alternatives for use in high strength livestock waste treatment systems including use of FKC screw press for solids separation, decanter and disc centrifuges for fine solids separation, aeration systems, membrane systems (microfiltration, ultrafiltration, RO and ammonia removal via a gas permeable membrane); solids processing equipment including dryers, incineration and gasification.

### Woodard & Curran, Inc.

**Chief Engineer/Project Manager/Project Engineer.** Chief engineer responsible for technical review of design documents. Client/Project manager responsible for proposal preparation, budget development, scheduling and overall project

management of water and wastewater projects. Project engineer responsible for alternatives evaluation and development of facilities plans, detailed design of wastewater conveyance and treatment facilities with specialty in process mechanical design.

**Metcalf & Eddy (Boston, NYC, Wakefield)**
**Engineer/Project Engineer.** Engineer/project engineer responsible for process mechanical design and construction management of wastewater treatment facility improvements.

## Representative Experience

Design manager for the 110 MGD Coney Island WPCP Level 1 BNR upgrade. Chief engineer responsible for the development, permitting, design, construction and startup of low oxygen simultaneous nitrification-denitrification BNR waste treatment systems for high strength manure waste streams at 1,200 and 2,500 milk cow dairy farms. The process flow trains included flow equalization, influent pumping of 10% TS, coarse solids separation with a screw press, low oxygen BNR with simultaneous nitrification-denitrification, effluent polishing with decanter and disc centrifuges and effluent disposal via irrigation.

Project Manager for the planning, financing, permitting and design of the Acton, Massachusetts wastewater collection system and treatment facility. The wastewater collection system included approximately 60,000 feet of sewer, seven pump stations and several thousand feet of force main. The wastewater treatment facility was designed in a modular fashion such that 0.5 MGD of capacity with build out to 1 MGD. The wastewater treatment facility process flow train includes influent pumping, fine screening with step screens, grit removal, sequencing batch reactors, post equalization basins, filtration, UV disinfection, and subsurface disposal via rapid infiltration basins. The SBRs are designed for BNR to accomplish nitrification, denitrification and P removal. Acetic acid is utilized to maximize BNR of P. Metal salt addition capabilities are also included to maximize P removal.

Project Manager on the Comprehensive Plant Evaluation (CPE), bar screen replacement and influent pumping system projects at the Lewiston-Auburn Water Pollution Control Authority's wastewater treatment facility. The CPE included design, operations, organization, cost, equipment and energy evaluations of the various treatment process and equipment. The CPE results were used in concert with the LAWPCA management team to develop a Management Action Plan (MAP). The MAP prioritized recommended improvements (large capital, small capital, and organizational) over an approximate five-year period for implementation by the LAWPCA.

Project Manager on the Devens, Massachusetts Regional Wastewater Facilities Planning Project. The Devens project included Comprehensive Plant Evaluations of the Ayer, MCI-Shirley, and Devens wastewater treatment facilities; extensive stakeholder meetings with several towns and environmental groups; wastewater flow and loads projections for the regional study area; septage volumes and loading projections for the regional study area; extensive meetings with the DEP and EPA regarding facility permitting (ENF, discharge, sewer extension, etc.); and preliminary design of a 3.0-mgd regional wastewater treatment facility.

Project Manager for the planning, financing, design and construction of new wastewater collection and treatment facilities for Warren, Maine. The facilities planning phase of the Warren project included the evaluation of wastewater treatment alternatives serving the District only, as well as regional alternatives to serve both the District and State of Maine Department of Correction's facilities in South Warren. The alternative jointly selected by the District and MDOC was a regional facility consisting of pump stations, aerated lagoons, storage lagoon, DAF effluent polishing and UV disinfection.

Project Manager on the design/construction of the University of New England's wastewater treatment facility with Sargent Constructors, Inc. Unit processes designed at the reconstructed 100,000-GPD wastewater treatment facility included influent flow equalization, sequencing batch reactors (SBRs), effluent flow equalization, effluent filtration, chlorination and dechlorination. Project challenges included doubling of existing wastewater treatment facility organic load treatment capacity, maintenance of operations during construction operations, and adherence to a very tight project schedule.

## Experience Summary

Ken Hoff is a collaborative leader with more than 13 years of experience in environmental health and safety (EHS) program development, internal and external customer communication, and hazard mitigation techniques related to civilian and military projects. His operations experience includes manufacturing, warehouse, construction, and heavy equipment safety (cranes, loaders). Ken has extensive experience in implementing effective EHS policies and processes, establishing training programs, and executing metrics-based operational decisions. He provides a unique global perspective with a proven ability to operate in high-pressure team environments.

**Assignment**

*Well Construction Contract Services – Health & Safety*

**Education**

*BS, Workforce Leadership (Occupational Training and Development), University of Louisville, Louisville, Kentucky, 2008*

**Certification**

*Certified Safety Professional, 36563*

*Associate Safety Professional, 30143*

*Construction Health and Safety Technician (CHST), Board of Certified Safety Professionals, C3532*

*HAZWOPER (40 hours)*

*OHSAS 18001 Health and Safety Management Systems Lead Auditor*

*OSHA 510 Occupational Safety and Health Standards for the Construction Industry*

**Experience**

*13 years*

**Joined Firm**

*2018*

**Relevant Expertise**

- *Safety culture initiatives*
- *Behavior-based safety strategies*
- *Regulatory compliance*
- *Incident investigations*
- *Workers' compensation management*
- *Root cause analysis*
- *Corrective action implementation*
- *Industrial hygiene*
- *Metrics analysis*
- *Budget and cost reporting*
- *Scheduling and planning*
- *Training development and execution*
- *Auditing*
- *Job safety analyses*
- *Health and safety plans*
- *ISNetworld*

### Health and Safety Program Management, Brown and Caldwell, Orlando, Florida

**Senior Municipal Safety Manager.** Ken is responsible for health and safety (H&S) program oversight of Brown and Caldwell's (BC's) three Municipal Business Units (East, West and Cal/Desert). He reviews and approves approximately 30 Field Work Safety Plans (FWSP) and supplementary requirements for municipal projects monthly. Ken also oversees the management and coordination of safety training for the entire organization, which is comprised of approximately 1,600 people. He frequently leads Field Work Safety Training (4 hour) and Hazardous Waste Operations and Emergency Response (HAZWOPER) refresher (8 hour) training for employees that perform operations in the field. Additional responsibilities include reviewing and generating monthly H&S performance indicator reports for distribution to the organization, overseeing the annual review of BC's H&S manual to reflect regulatory and internal policy changes, conducting monthly internal H&S communication meetings with multiple internal teams, and approving business continuity plans for the company.

### EHS Program Management, Anixter Inc., Orlando, Florida

**Sr. Manager EHS.** Ken managed a full spectrum of EHS projects for an electrical/utility wholesale distributor and provided guidance to executive management pertaining to safety culture improvement, accident trends, and incident reduction efforts while working remotely with 140 sites in the United States and Canada. This work included devising action plans to reduce Occupational Safety and Health Administration (OSHA) and experience modification rate (EMR) rates resulting in measurable rate reductions below industry standards, auditing over 50 sites per year for organizational and regulatory compliance, managing the development and submission of EHS contract-required deliverables for 20 large utility customers, advising and coordinating environmental regulatory compliance items related to new construction (e.g. Phase I, stormwater pollution prevention plan [SWPPP]) and maintenance of compliance items for existing branches (e.g. Environmental Protection Agency's [EPA's] Emergency Planning and Community Right-to-Know Act [EPCRA] Tier II, spill prevention, control, and countermeasure [SPCC]), overseeing Department of Transportation (DOT) regulatory compliance for a fleet of 250 commercial vehicles and a pool of 235 drivers, and coordinating EHS training for 1,700 associates, ensuring training content followed pertinent federal, state, and local regulations (i.e. OSHA, DOT, EPA).

### EHS Program Management, Brunswick Boat Group, Merritt Island, Florida

**EHS Supervisor.** Ken led and implemented the EHS program for a recreational boat prototypes manufacturer. He conducted over 60 audits and 20 new process hazard assessments; reduced OSHA rates by 20 percent and EMR rates by 9 percent during the first year; advised managers on regulatory issues including compliance, interpretations, and inspections; maintained environmental compliance by developing SPCC, air permits, and SWPPPs; managed hazardous waste and hazardous materials transport programs in accordance with Resource Conservation and Recovery Act (RCRA) and Hazardous Materials Transportation Act regulations; and administered and evaluated comprehensive EHS training courses for 280 personnel.

### Quality and H&S Program Management, Allied Container Systems, Orlando, Florida

**H&S Manager.** Ken managed quality and H&S programs at domestic and international military bases for a defense contractor with active Department of Defense construction contracts valued over $200M. He served as lead auditor on over 100 safety and quality audits of construction and manufacturing sites. Ken produced over 500 contract-required safety documents annually including job hazard analysis, site H&S plans, and fall protection plans; provided leadership and guidance for six safety captains that worked on domestic and international sites; reduced the organization's recordable incident rate and EMR from 4.67 in 2010 to 0.0 for 2011 and 2012 and from 1.11 in 2012/2013 to 0.79 in 2013/2014.

### Instrumented Ranges, MSGI Technology, Orlando, Florida

**Military Analyst II.** Ken created and administered training modules to Department of the Army civilians for a defense contractor specializing in instrumented range implementation and management. He developed, delivered, and evaluated new equipment training for various United States Army Instrumented Ranges, participated in and passed government acceptance testing for three live-fire training systems, and authored contract deliverables for the United States Army pertaining to instructional design and instrumented ranges.

### H&S Program Management, United States Army, Multiple Locations

**Safety Manager.** Ken was responsible for the health, safety, and welfare of over 750 soldiers and 250 Department of the Army civilians. He developed and delivered H&S training events for an organization of over 1,000 personnel, identified and controlled hazardous conditions and practices associated with hundreds of live-fire and non-live-fire training exercises, and audited five subordinate organizations' safety programs and mentored each organization's junior safety manager.

# Sarah "Sally" Durall

## McNabb Hydrogeologic Consulting, Inc.

### Project Related Experience

**McNabb Hydrogeologic Consulting, Inc., Jupiter, Florida - (February 2008-present)**
**Project Geologist/Project Manager-** Provide hydrogeologic consulting services with emphasis on deep injection well design, permitting, construction resident observation, and mechanical integrity testing services.

**Florida Power & Light Turkey Point Injection Well System** – Provided construction oversight services for construction of a 3,200-foot deep injection well and associated dual-zone monitor well. The injection well has a permitted disposal capacity of 15.59 mgd.

**City of Lake Worth Class I Industrial Deep Injection Well System** – Provided construction oversight services for construction of a 3,300-foot Class I deep injection well and associated dual-zone monitor well at the Lake Worth Reverse-Osmosis Water Treatment Plant.

**City of West Palm Beach East Central Regional WRF Dual-Zone Monitor Wells** – Provided construction oversight services for construction of three 2,300-foot deep dual-zone monitor wells associated with the Class I deep injection well system at the East Central Water Reclamation Facility. The project included the plugging and abandonment of three monitoring tubes that were no longer in service.

**Florida Power & Light West County Energy Center Injection Well System** – Provided construction oversight services for the construction of Class I deep injection well IW-1, IW-2 and dual-zone monitor well DZMW-1. The wells were constructed to a total depth of 3,250 feet, with a 20-inch diameter final casing and 16-inch diameter FRP injection liner.

**Florida Power & Light Okeechobee Clean Energy Center Injection Well System** – Provided construction oversight services for construction of 2 deep injection wells and 1 dual-zone monitor well. The injection wells were drilled to a depth of 3,200 feet and each have a capacity of 9.6 mgd.

**Okeechobee Utility Authority Cemetery Road WWTP Class I Deep Injection Well System** – Provided construction oversight services for construction of a 3,200-foot Class I deep injection well and associated dual-zone monitor well at the Cemetery Road Wastewater Treatment Plant.

**Martin County Utilities North W/WWTP Dual-Zone Monitor Well** – Provided construction oversight services for construction of one 2,300-foot deep dual-zone monitor well associated with the Class I deep injection well system at the County's North Water and Wastewater Treatment Plant. The project also included the oversight of the plugging and abandonment of the original dual-zone monitor well.

**Port St. Lucie Injection Well Systems** – Provided regulatory compliance assistance for each of the City's deep injection well systems. Services provided included preparing operating permit renewals and mechanical integrity testing field services for the City injection well systems.

**Palm Beach County Water Utilities Western Region WWTP Deep Injection Well Rehabilitation** – Provided resident observation and consulting services for well rehabilitation of a Class I deep well at the County's Western Region WWTP. The project included chlorinating, acidization and development of the injection well and injectivity testing.

**Martin County Utilities North W/WWTP Dual-Zone Monitor Well** – Provided construction oversight services for construction of one 2,300-foot deep dual-zone monitor well associated with the Class I deep injection well system at the County's North Water and Wastewater Treatment Plant. The project also included the oversight of the plugging and abandonment of the original dual-zone monitor well.

**City of Port St. Lucie Northport WWTP Deep Injection Well MIT** – Provided field services for mechanical integrity testing of a Class I deep injection well at the City's Northport Wastewater Treatment Plant.

**City of West Palm Beach East Central Regional WRF IW-7 MIT** – Provided field services for mechanical integrity testing of a Class I deep injection well.

**City of Key West Richard A. Heyman Environmental Protection Facility MITs** – Provided field services for mechanical integrity testing of two Class I municipal deep injection wells and the City's Environmental Protection Facility.

**Charlotte County East Port WRF Deep Injection Well MIT** – Provided field services for mechanical integrity testing of a Class I municipal deep injection well at the County's East Port Water Reclamation Facility.

**Bonita Springs Utilities Water Treatment Facility** – Provided resident observation and consulting services for mechanical integrity testing at the Bonita Springs Utilities Reverse Osmosis Water Treatment Facility Class I deep injection well.

**Bonita Springs Utilities Wastewater Reclamation Facility** – Provided resident observation and consulting services for mechanical integrity testing at the Bonita Springs Utilities Wastewater Reclamation Facility Class I deep injection well.

**ARCADIS, Inc. (1999 – 2008)**
**Hydrogeologist**
Staff hydrogeologist focused primarily on deep injection well and Floridan production well design, permitting and construction management. Responsibilities included design of deep injection and water supply wells, preparation of Florida Department of Environmental Protection (FDEP) injection well and Water Management District production well permit applications, responses to requests for information, development and interpretation of deep injection well and production well construction and testing programs, preparation of construction contract documents and management of well construction contracts. Other responsibilities included providing resident observation services during well construction and testing, and preparation of well construction completion reports.

**City of Port St. Lucie James E. Anderson Class I Industrial Deep Injection Well System –** Provided construction oversight services for construction of a Class I Industrial deep injection well system for disposal of reverse osmosis concentrate at the City's James E. Anderson Reverse Osmosis Water Treatment Plant. Also provided resident observation and consulting services for mechanical integrity testing and operating permit renewal.

**City of Port St. Lucie Westport Class I Industrial Deep Injection Well System –** Provided construction oversight services for construction of a tubing and packer design deep injection well system for disposal of wastewater and reverse osmosis concentrate at City's Westport Wastewater Treatment Plant. Also provided consulting services for mechanical integrity testing and operating permit renewal for the deep injection well system.

**City of Port St. Lucie South Regional (Glades) Deep Injection Well System** – Provided design and permitting services for a deep injection well system for disposal of wastewater for the City's South Regional Wastewater Treatment Facility.

**Village of Wellington Class I Industrial Deep Injection Well System** – Provided construction oversight services during the construction of an injection well system for disposal of reverse osmosis concentrate at the Village of Wellington Reverse Osmosis Water Treatment Facility. Responsibilities included communication with the contractor and regulatory agencies, interpretation of test data, and preparation of the engineering report summarizing the construction of testing of the wells.

**Key Largo Wastewater Treatment District Deep Injection Well System –** Provided design and permitting services for a deep injection well system for disposal of wastewater for a new wastewater facility in Key Largo, Florida.

**Florida Governmental Utility Authority Deep Injection Well System –** Provided design and permitting services for a deep injection well system for the Golden Gate Wastewater Treatment Facility for disposal of wastewater.

**Florida Governmental Utility Authority Floridan Aquifer Supply Wells** – Provided design and technical specifications for the construction and testing of multiple Floridan Aquifer wells for the Florida Governmental Utility Authority water treatment facilities located in Collier, Polk, and Osceola Counties, Florida.

**Education**
1999, B.S. Geology, University of Tennessee at Knoxville

# Mitchell Jennings

## McNabb Hydrogeologic Consulting, Inc.

### Project Related Experience

**McNabb Hydrogeologic Consulting, Inc., Jupiter, Florida - (June 2019-present)**
**Project Geologist/Project Manager-** Provide hydrogeologic consulting services with emphasis on deep injection well design, permitting, construction resident observation, and mechanical integrity testing services.

**Immokalee Water and Sewer District WWTP Class I Injection Well System Operating Permit** – Provided permit renewal services for the operating permit of a Class I deep injection well system.

**Coral Springs Improvement District Injection Well System** – Provided construction administration services for the abandonment of the upper and lower monitoring zones of monitor well MW-1 which is associated with Class I injection well IW-1.

**Frankens Energy, LLC. Mechanical Integrity Testing** – Provided field services for mechanical integrity testing of the Frankens Energy Class I deep injection well.

**S&ME, Inc. (2016 – 2019)**
**Staff Geologist**
Responsibilities included: monitor well construction oversight, environmental permit preparation, field data collection and characterization, subsurface exploration programs and laboratory testing programs, site and safety management, field monitoring of soil test borings and sampling, remediation system construction, remediation system maintenance, sample collection and preparation for laboratory analysis, air monitoring, proposal preparation, Phase I and II Environmental Site Assessments, natural resource surveys, groundwater sampling, soil sampling and screening, and Geographic Information Systems (GIS) mapping.

**Bowser Ridge Landfill Washington County, TN –** Provided construction oversight for the installation of three groundwater monitoring wells. Performed tasks related to the quarterly monitoring of methane at designated locations at the Bowser Ridge Landfill. Conducted monthly and weekly inspections of the leachate collection systems and landfill property in accordance with the post-closure monitoring plan.

**Carter County Landfill Carter County, TN** – Provided construction oversight for the installation of three groundwater monitoring wells. Performed groundwater monitoring and sampling services for seven groundwater monitoring wells. Collected groundwater samples using approved methods and performed measurements of water quality parameters using calibrated field meters.

**Holston Landfill Sullivan County, TN –** Performed construction oversight for the installation of multiple groundwater and methane monitoring wells. Provided permit renewal and review services for the operation of the post-closure monitoring plan. Conducted monthly and weekly inspections of the leachate collection systems and landfill property in accordance with the post-closure monitoring plan.

**Kingsport Demolition Landfill Kingsport, TN** – Provided construction oversight for the installation of two groundwater monitoring wells. Performed groundwater monitoring and sampling services for ten groundwater monitoring wells. Collected groundwater samples using approved methods and performed measurements of water quality parameters using calibrated field meters.

**Meadow Branch Landfill Athens, TN** - Provided permit renewal and review services for the operation and addition of landfill cells. Provided construction oversight and environmental sampling services for fourteen monitoring wells at the landfill.

**Phase I and II Environmental Site Assessments –** Conducted Phase I and Phase II ESAs for municipal, private, industrial, and commercial clients in Tennessee and Virginia. Property acreage ranging from 1 acre up to 125 acres.

**Bridgestone Retail Operations, LLC. Elizabethton, TN. –** Followed a strict Corrective Action Plan to obtain a No Further Action determination without any land use restrictions from the Tennessee Division of Remediation. Tasks include: ex-situ soil treatment, soil sampling and classification by grab method and Geo-Probe method for laboratory analysis, onsite chemical field tests to determine Extractable Petroleum Hydrocarbon (EPH) levels in soil, and use of a photoionization detector in onsite field tests to determine Volatile Organic Compound (VOC) levels in the soil.

**Environmental Review Elizabethton, TN** – Assisted in site reconnaissance for an environmental review. His tasks included: an onsite interview with the property management's representative, performed written and photographic documentation of property, and used AutoCAD and GIS software to develop detailed schematics of properties and adjacent areas.

**Stormwater Pollution Prevention Plan Preparation** – Aided in a SWPPP Preparation for BAE Systems in Kingsport, TN. tasks included: using AutoCad and GIS software to locate and map streams and storm water channels potentially affected by the proposed construction of an aboveground pipeline.

**Holston Army Ammunition Plant Hawkins County, TN** – Performed tasks related to asbestos air monitoring via procedures set forth by state and federal regulatory agencies.

**TVA Boone Dam Berm Construction Project Sullivan County, TN** – Acted as field inspector for dam safety instrumentation conduit and stone fill (riprap) during construction of the upstream and downstream berms at TVA Boone Dam. This project was one of several phases of construction at TVA's Boone dam. A berm was constructed at the dam to reinforce and widen the dam prior to construction of a new cutoff wall. Provided oversight for trench excavating and the routing of dam safety instrumentation conduit below riprap placement on the earthen embankment of the dam. Examined stone samples for acceptability and proper production, conducted field gradations of riprap, as well as handling, transporting and placement processes.

**TVA Allen Fossil Plant Memphis, TN** – Provided field geologist support for TVA's Allen Fossil Plant geotechnical exploration project. As onsite project manager my role was to coordinate the field exploration and implement a safe approach, while logging the soil and rock core samples extracted from the borings. Performed soil resistivity testing during the scope of this project.

**Solar Pile Load Testing Blakely, GA and Jonesborough, TN** – Provided field geologist support for compression, tension and lateral load testing on solar foundation piles. As onsite project manager my role was to coordinate testing activities, aid in set up of equipment, monitor and record test data, and report daily activities to office personnel.

**TDOT Pellissippi Parkway Expansion Project Blount County, TN** – Provided field geologist support for TDOT's geotechnical exploration project. This project was designed to provide TDOT with subsurface conditions relating to construction of the Alcoa Highway Bypass via Pellissippi Parkway in Blount County, TN. As field supervisor my role was to coordinate the field exploration and implement a safe approach, while logging soil and rock core samples extracted from the borings. I was also tasked with the installation and monitoring of multiple piezometers during the scope of this project.

## Education

2016, B.S. Geology / Minor in Geographic Information Systems, East Tennessee State University

**Christine Miranda, P.E.**
*Principal Engineer*
**Holtz Consulting Engineers, Inc.**

Christine Miranda has been a Client Service Manager and Project Manager with Holtz Consulting Engineers, Inc. since 2012. Ms. Miranda is experienced in successfully managing multiple projects, from small, fast paced projects to large projects with numerous disciplines and subconsultants. She brings over 20 years of experience in the design of water treatment and distribution systems, wastewater treatment and collection systems, pumping stations, effluent disposal systems, and biosolids management.

## Project Related Experience

**Water Distribution Improvements State Revolving Fund Project - City of Stuart** Project included design, permitting, and construction of approximately 59,000 linear feet (lf) of 6-inch through 12-inch water mains in existing residential neighborhoods and commercial developments for the City of Stuart. The new mains replace inadequately sized mains, looped dead ends, old mains, and increase fire protection for the City. The mains are located in City, County, and Florida Department of Transportation right-of-ways. HCE assisted the City of Stuart with obtaining a $6-million-dollar Drinking Water State Revolving Fund (SRF) loan for this project. Work included preparing and submitting the Request for Inclusion (RFI), Water Facilities Plan, holding the public meeting, assistance with the loan application, loan agreement and business plans, and construction phase SRF compliance activities during construction including working with the Contractor to ensure all applicable materials comply with the provisions of the "American Iron and Steel" act, review and approve payroll information submitted by the Contractor and subcontractor(s) to ensure requirements for the Davis Bacon wage requirements are met, conduct labor interviews with the Contractor's personnel throughout the construction duration, and preparation and submittal of monthly disbursement requests with required supporting documentation to the FDEP SRF department in Tallahassee.

**Pretreatment System Construction SRF Assistance – City of Stuart** Assisted the City with various activities associated with pursuing Drinking Water SRF loan financing administered by the FDEP for a new pretreatment system and alternative water supply and treatment facility. Work included preparation of the Requests for Inclusions, Water Facilities Plan, and meetings with the SRF staff. The City of Stuart successfully obtained funding with principal forgiveness for the construction of the pretreatment system and a low-interest loan for the design of the first phase of the alternative water supply reverse osmosis treatment facility. HCE also provided SRF compliance activities during construction.

**Water Main Interconnects SRF Assistance – City of Pompano Beach** HCE assisted the City of Pompano Beach with the preparation and submittal of the required documentation for the procurement of an SRF loan with principal forgiveness for the construction of upgrades to four existing unmetered interconnections with adjacent water distribution systems. The new upgrades included two-way metered flow capabilities, check valves for backflow prevention, and flushing valves.

**2nd Street Drainage Improvements SRF Assistance – City of Pompano Beach** HCE assisted the City of Pompano Beach with the preparation and submittal of the required documentation for the procurement of an Clean Water SRF loan for the construction of drainage improvements in the area of 2nd Street. Work includes Work included preparing and submitting the Request for Inclusion (RFI), Water Facilities Plan, holding the public meeting, and assistance with the loan application, loan agreement and business plans.

**Alternative Water Supply SRF– City of Stuart** HCE provided SRF funding assistance for the City of Stuart to provide an alternative water supply and treatment system and implement improvements for a new reverse osmosis water treatment system. HCE assisted with preparation and submittal of the required SRF documents in order to obtain both design loans and construction loans with principal forgiveness.

## Education

Bachelor of Science in BioResource Engineering, Rutgers University, 1999

## Registration

Professional Engineer, Registration No. 60906, State of Florida

## Experience Summary

Brice Wimsatt is a geologist with experience with the State Revolving Fund (SRF) Davis Bacon compliance support, environmental sampling and remediation.

**Assignment**

*Well Construction Contract Services – Contract Closeout*

**Education**

*B.S. Geology, Florida Atlantic University, Boca Raton, FL*

**Certifications**

*OSHA 40-hr HAZWOPER certification*

*OSHA 8-Hour HAZWOPER Refresher Training*

*First Aid & CPR Certified*

*MSHA Certification*

*OSHA 8-Hour Site Supervisor Certification*

*Construction Management Certification*

**Experience**

*2 years*

**Joined Firm**

*2017*

**Relevant Expertise**

*Sedimentary geology*

*Contaminant remediation*

*Drilling and borehole-logging*

### Groundwater Investigation, XL Environmental Inc., Orlando, Florida

**Geologist.** Remedial field operations including well installation, soil and groundwater sampling. Installation of data loggers and collecting data.

### Phase I and II Environmental Site Assessments (ESAs), DR Horton, within Florida

**Geologist.** Conducted environmental site evaluations to determine potential environmental liabilities associated with property acquisitions and divestitures, researched and reviewed the site's historical and regulatory background. Remedial field operations including groundwater and soil sampling.

### SRF Compliance Support, Water Looping Project, Orange City, Florida

**Geologist.** Conducted site inspections, reports and labor interviews to ensure payroll was in compliance with Davis Bacon.

### Confidential Client, Florida

**Geologist.** Conducted pilot to remove 1,4- Dioxane from municipality water supply. Responsibilities included pilot construction, water sampling, data analysis, daily operations oversite, peroxide residual testing and borehole-logging of an existing well.

### Davis Bacon Compliance, Pipe Bursting, Orange County, Florida

Responsible for overseeing and submitting Contractor and Subcontractor payrolls associated with Davis Bacon. Conducted site inspections, reports and labor interviews.

### City of Sanford Sewer Rehabilitation, Florida

**Geologist.** Conducted site inspections and reports. Reviewed before and after sewer lining videos, looking for irregularities in the lining. Preparing quarterly reports.

### Albertsons Remediation, Clearwater, Florida

**Geologist.** Remedial field operation including soil sampling.

### Florida City Gas, Hialeah, Florida

**Geologist.** Remedial field operation including stockpile soil sampling.

### Remodel Regulatory Compliance and Permitting, Confidential Client, Nationwide

**Compliance Auditor.** The program was established to provide operations support to a nationwide retailer for their Store Remodel programs in a 17 State region across the US. Construction site walk-throughs are completed to assess health and safety work practices and ensure environmental compliance.

**North District Wastewater Treatment Plant (NDWWTP) Chlorine and Toxicity Study, Miami Dade Water and Sewer Department (MDWASD), Miami, Florida.**

**Geologist.** The North District Wastewater Treatment Plant (NDWWTP) is one of three regional treatment facilities that treat the wastewater collected from Miami-Dade County. The plant has a permitted surface water discharge limit of 100 million gallons per day (MGD) and a current annual average flow of approximately 80 MGD. The facility operates under a Florida Domestic Wastewater Facility Permit issued by the Florida Department of Environmental Protection (FDEP). Testing will be performed to evaluate the minimum and maximum TRC limits at the chlorine monitoring location that will provide the disinfection requirements for fecal coliform and enterococci while maintaining whole effluent toxicity limits.

Managing Engineer

# V. "Ravi" Ravisangar, PhD, PE, BCEE

## Experience Summary

Dr. Ravisangar has more than 19 years of experience in water and wastewater pumping and treatment related work. His experience spans a broad range from studies and design to construction and startup. His subject matter expertise includes water and wastewater pumping system analysis and design, pumping system rehabilitation, water and wastewater plant hydraulic analyses, water distribution system modeling, dynamic and transient hydraulic analysis of piping networks, surge protection systems design, and sludge and slurry rheology and hydraulics of non-Newtonian fluids. He is also an active technical reviewer for ASCE Journal of Pipeline Systems. He led the design effort to adding new pumps for existing deep injection well pumping system and is ready to leverage that experience to benefit the City of Hollywood.

**Assignment**

*Post-Construction Operational Testing - Planning*

**Education**

*Ph.D., Environmental Engineering, Georgia Institute of Technology*

*M.S., Civil Engineering, Environmental Hydraulics and Water Resources, Georgia Institute of Technology*

*M.S., Environmental Engineering, Georgia Institute of Technology*

*B.Sc., Civil Engineering, University of Sri Lanka at Peradeniya*

**Registration**

*Professional Engineer PE029284, Georgia, 2003*

**Experience**

*19 years*

**Joined Firm**

*2013*

**Relevant Expertise**

- *Pumping System Analysis and Design*
- *Treatment Plant Hydraulic Evaluation*
- *Hydraulic Transient Analysis*
- *Slurry and Sludge Pumping.*

### NDWWTP Deep Injection Well Pump Station Improvements, MDWASD, Miami, FL

**Lead Pumping Systems Engineer.** Dr. Ravisangar lead the design effort of adding new pumps for existing deep injection well pump station. Project involved detailed evaluation of existing pumping system, deep injection well performance, recommendation for replacement pumps, modifications to existing well heads, and developing new control strategies for pump and well operation for optimized performance

### Pump Stations 301, 414, 415, 416 and 417 Improvements BODRs, NDWWTP Service Area, MDWASD, Miami, Florida

**Lead Pumping System Engineer.** Dr Ravisangar served as lead pumping system engineer and subject matter expert for the preliminary design (BODR) of major rehabilitation work at Pump Stations 301, 414, 415, 416 and 417. Project involved detailed hydraulic evaluation of existing systems and recommendations for pumping system replacement to optimize performance. Working closely with the PMCM, condition assessments and alternatives evaluations were also performed to identify a complete

### North Regional WWTP Reclaimed Water Plant Expansion, Broward County Water and Wastewater Services' (BCWWS), Broward County, Florida

**Lead Pumping Systems Engineer.** Dr. Ravisangar let the surge analysis efforts for the pump station associated with the expansion of BCWWS' existing reclaimed facility to increase its firm rated capacity from 10 mgd to approximately 26 mgd. This project is a result of the Ocean Outfall Legislation. The expansion will treat secondary effluent to meet High Level Disinfection (HLD) standards as defined by the Florida Department of Environmental Protection (FDEP). The proposed expansion is estimated at $53 million construction cost and includes construction of a new filter feed pump station, additional filters, chemical storage and feed, chlorine contact basins, reclaimed water pump station, electrical power distribution and requisite back-up emergency power.

### Springtree WWTP Headworks Design, City of Sunrise, Sunrise, Florida

**QA/QC Technical Advisor.** For the Headworks Design, particularly the hydraulic elements. The project design included creating a plant-wide hydraulic profile, raising the height of the existing channels, and a new passive overflow for improved O&M flexibility. The project involved the replacement of three automatic bar screens with 6 mm perforated plates and screening washer-compactors, as well as the replacement of two grit vortex drives, two recessed

impeller grit pumps, and two hydrocyclone/ degritter units. A new biotrickling filter type odor control system was included to treat foul air generated at the Headworks Structure.

### Rehabilitation of Flood Damaged Pump Stations for City of Clarksville, Tennessee

**Lead Hydraulic Analyst.** For the City of Clarksville, Dr. Ravisangar provided the design for the rehabilitation of the following flood damaged pump stations: Main, McClure, Gallows Hollow, Red River, Old Russellville Pike, Talley Drive, Southern Hills, Pettus Street, and Providence Cabinet Shop.

### Design of the Alcovy River Wastewater Pumping Station, Gwinnett County, Georgia

**Lead Engineer.** This unique wastewater pumping system design included two in-line booster pumping stations and three lift stations to deliver a firm pumping flow of 35 mgd.

### Hopkins Lift Station and Forcemain Project, MCES, Minnesota

**Lead Hydraulic Analyst.** For Hopkins Lift Station and Forcemain Project, Dr. Ravisangar was the lead hydraulic analyst. The project included replacement of the main lift station (L-27), construction of a new forcemain, and rehabilitation of sections of existing forcemain. Analyses included sizing of the new lift station, hydraulic/transient analysis of existing forcemain, preliminary transient control strategy for new dual forcemain, design criteria for a new forcemain.

### Marlboro Meadows PS, Washington Suburban Sanitary Commission, Washington, DC

**Lead Hydraulic Analyst.** Dr. Ravisangar served as the lead hydraulic analyst for the design of a new pump station and force main system.

### Rehabilitation of Potomac Pumping Station, Water and Sewer Authority, DC

**Lead Hydraulic Analyst.** For the rehabilitation of the Potomac Pumping Station, Dr. Ravisangar served as the lead hydraulic analyst to increase capacity 460 mgd. The project included pump re-engineering, pump impeller replacements for higher capacity, and additional surge control measures for the expanded capacity.

### Improvements to Influent Pumping Station and Intermediate Pumping Station, Kingsport, Tennessee

**Lead Hydraulic Analyst.** For pump station improvements at the City of Kingsport's wastewater treatment plant, Dr. Ravisangar's analyses included pump replacement, impeller replacement, and addition of new pumps to increase the firm pumping capacity of both stations to 35 mgd.

### Improvements to North Pump Station and Stevens Avenue Pump Station, Lancaster, Pennsylvania

**Lead Hydraulic Analyst.** For the City of Lancaster, Dr. Ravisangar is the lead hydraulic analyst for design of improvements to two of the city's pump stations. The North pumping stations will be expanded to 43 mgd while the Stevens Avenue pump station will be expanded to 11 mgd. Additional improvements will include new surge control measures at the pump stations to handle an intermittent line velocity over 9 ft/sec.

### Improvements to Five Pump Stations (PS), Clarksville, Tennessee

**Lead Hydraulic Analyst.** For the City of Clarksville, Dr. Ravisangar was the lead hydraulic analyst for improvements to the Brownsville PS, Gateway PS, Countryside PS, Mary's Garden PS, and Red Coat Run PS. Improvements included new submersible-type pumps and manifolded force main systems.

### Rehabilitation and Expansion of Three Pump Stations, Upper Occoquan Sewage Authority (UOSA), Virginia

**Lead Hydraulic Analyst.** Lead hydraulic analyst for rehabilitation and expansion of the Winters Branch Pumping Station, Cockrell Branch Pumping Station, and Russia Branch Pumping Station. The project included new dry pit submersible-type pumps and new surge control measures.

## Experience Summary

Ms. Burney is an environmental engineer experienced in water, wastewater, and reclaimed water systems design. She also offers experience in planning, design, permitting, bidding, field inspections, operations and maintenance, and report writing.

**Assignment**

*Post-Construction Operational Testing – Design Support*

**Education**

*B.S. – Environmental Engineering, University of Florida, 2007*

**Registration**

*Professional Engineer: Florida, 2012*

**Experience**

*9 years*

**Joined Firm**

*2014*

**Relevant Expertise**

- *Wastewater*
- *Reclaimed Water Systems*
- *Water*
- *Design*
- *Planning*
- *Permitting*
- *Field Inspections*
- *Report Writing*

### George T. Lohmeyer Regional Wastewater Treatment Plant Deep Injection Well Mechanical Integrity Testing, Fort Lauderdale, Florida

**Project Engineer.** Ms. Burney produced a testing plan; field witnessed testing activities; and produced a final report for the five deep injection wells at the GTL WWTP. The final report included a summary and interpretation of the performed testing, as well as analysis of weekly monitoring data for the five-year period.

### George T. Lohmeyer Regional Wastewater Treatment Plant Class I Deep Injection Well Operation Permit Renewal, Fort Lauderdale, Florida

**Project Engineer.** Ms. Burney prepared the FDEP Underground Injection Control (UIC) application for the GTL WWTP. She worked with the client and various regulatory agencies to compile necessary data, analyzed five years of flow and nutrient effluent data, performed calculations and analysis of hydrogeologic data, and worked with the FDEP to identify their requirements and expectations.

### Concentrate Injection Well Mechanical Integrity Testing and Operating Permit Renewal, Deerfield Beach, Florida

**Project Engineer.** Ms. Burney witnessed mechanical integrity testing activities performed on the concentrate injection well at the West WTP. These field tests and subsequent report involving desktop water quality and well operation trend analysis, also performed by Ms. Burney, are required by the state every 5 years.

### Pump Station S-5A Improvements and Automation Design and Services During Construction, South Florida Water Management District, Florida

**Engineer of Record.** Ms. Burney was the Engineer of Record and Task lead on the design of a dual 5kW emergency, standby Generator system housed in a new 150 mph rated concrete building with both manual and automatic transfer switches. The new Generator system included a fuel system, a cooling water system (for heat exchanger cooling), and an exhaust system that meets all applicable EPA exhaust requirements. Ms. Burney was also the Engineer of Record for a set of three automatic backwashing strainers for the entire pump station's cooling water system. Ms. Burney's area of expertise was expanded during construction to include three 20 HP vertical turbine Raw Water Pumps, bulk fuel oil, lube oil, and waste oil pumps and storage, vacuum priming pumps, and compressed air system.

### Springtree WWTP Headworks Improvements BODR and Design, City of Sunrise, Florida

**Engineer of Record/Design Manager.** Ms. Burney was the Engineer of Record for the replacement of three automatic bar screens with 6mm perforated plate screens and screenings washer-compactors, as well as the replacement of two 20 MGD grit vortex drives, two 25 HP recessed impeller grit pumps, and two hydrocyclone/degritter units. A new biotrickling filter type odor control system

was included to treat foul air generated at the Headworks Structure. The project design included creating a plant-wide hydraulic profile, raising the channel height of the existing systems, adding a passive overflow system for improved O&M flexibility. [149248 & 150432, 2016-present.]

### Sawgrass WWTP Train A Secondary Treatment Improvements, City of Sunrise, Florida

**Engineer of Record/Project Manager.** Ms. Burney was the Process Mechanical Engineer of Record and Project Manager for the evaluation of the original Train A secondary treatment process at the Sawgrass WWTP. The evaluation included extensive Biowin process modeling and hydraulic modeling of process improvements to remove the existing surge tanks and associated pumps no longer benefit the existing plant. The resulting changes to the treatment and flow in the aeration basin triggered the need to replace the existing process blowers and air diffuser and distribution system, as well as all major electrical equipment installed as part of the original plant construction

### George T. Lohmeyer Wastewater Treatment Plant Large Diameter Process Pipe Replacement – Phase 1&2, Fort Lauderdale, Florida

**Project Engineer.** Ms. Burney worked with lead hydraulic engineers to design the removal and replacement of PCCP process pipe ranging from 42 to 64 inches in diameter. The design work included updating the plant's hydraulic profile to size replacements pipes, investigating available liner technologies for pipe segments that were not physically replaceable, and developing a Maintenance of Plant Operation Plan (MOPO) to link the shutdown of major processes and the effects on plant operations to a viable sequence of construction. The plant was near both flow and spatial capacity, with limited operational flexibility during high flows and property/access for construction.

### Return Activated Sludge (RAS), Waste Activated Sludge (WAS) and Scum Pump Replacement Design, East Central Regional Water Reclamation Facility Board, Florida

**Engineer of Record/Project Manager.** Ms. Burney was the Engineer of Record and Project Manager for the replacement of twelve RAS pumps, ten WAS/scum pumps, and eight flowmeters including all valves, piping, and appurtenances.

### EECBG High Service Pump Replacement, Deerfield Beach, Florida

**Project Engineer.** Ms. Burney field tested and analyzed seven High Service Pumps for electrical pumping efficiency, measured as wire-to-water efficiency, in order to identify the most cost-effective use of the City's EECBG funds. Following this analysis, she designed the pump and piping replacement of the six High Service Pumps identified as offering the most cost savings over their useful life. The design had to meet all the requirements for EECBG funding, including Buy America.

### Wastewater Treatment Plant and Water Treatment Plant Improvements Design, Reidsville, North Carolina

**Process Engineer.** Ms. Burney served as a project engineer for the design of the new compressed air system for the Reidsville WWTP. The project included the conversion from surface aerators to high efficiency turbo blowers with fine bubble diffusers, and the design of a new bio-selector, anoxic zone. Ms. Burney also worked with lead process engineers to perform a comparative evaluation of different blower, diffusers, and mixing technologies for the plant, including the development of energy costs for each alternative during the preliminary design phase to aid in the technology selection.

### Design-Build of the Tunnel Dewatering Pump Station and Enhanced Clarification Facility, Washington, DC

**Process Engineer.** Ms. Burney was a project engineer for the new grit removal system for the 250 mgd (Phase I) Enhanced Clarification Facility (ECF) train at the DC Water Blue Plains WWTP. The system included evaluations of mechanical and hydraulic primary grit concentrators, the selection and design of a secondary grit concentration and classification units, and the design of a new grit slurry pumping system.

# Robert E. Hrabovsky, PE

## Experience Summary

Bob Hrabovsky is a professional engineer with experience in management, structural design, and construction of public utility and public works facilities. He provided structural engineering and design for everything from water and wastewater treatment plants and infrastructure to solid waste facilities and roadway construction. Over the last couple of years, Mr. Hrabovsky has served as Structural Engineer of Record on numerous large-scale Wastewater Treatment Plants and Everglades Restoration Program projects.

**Assignment**

*Structural*

**Education**

*B.S., Civil Engineering, University of Pittsburgh (Cum Laude)*

**Registration**

*Professional Engineer:*

- *43312, Florida, 1990*
- *29186, North Carolina, 2003*
- *37001, Maryland, 2009*

**Certifications**

*Certification for Environmental Audits and Site Assessments, Georgia Institute of Technology, 1994*

*Florida Building Code advanced course 2018*

**Experience**

*35 years*

**Joined Firm**

*1996*

**Relevant Expertise:**

- *Structural engineer of record for wastewater and water treatment plant improvements.*
- *Engineer of Record for infrastructure projects.*
- *Structural engineering associated solid waste projects, including landfill closure and transfer and maintenance facilities.*
- *Structural engineer of record for numerous Water Resources and Everglades Restoration projects.*
- *Construction Manager for numerous wastewater treatment plants*

### Structural Design of Water Treatment Plants and Related Facilities, Various Clients, Florida

**Associate/Project Manager.** Managed the structural design and construction of water treatment facilities, for the following:

- Improvements to the East/West Water Treatment Plants, City of Deerfield Beach, Florida
- Improvements on the Elevated Water Tank Booster Pumping Station for City of Deerfield Beach, Florida
- Econ Water Treatment Plant Expansion for Orange County, Florida
- East/West Water Storage Tanks and Repump Stations for City of Coral Springs, Florida
- Water Treatment Plant Expansion, City of Dunedin, Florida
- North Beach Reverse Osmosis Plant Expansion for Indian River County, Florida

### Structural Design of Water Treatment Plants and Related Facilities, Various Clients, Florida

**Associate/Project Engineer.** Project Engineer on numerous water treatment plants and pump stations throughout Florida, including Broward, Hillsborough, Lee, Manatee, Orange, and Palm Beach counties. A specific example includes:

- City of Coral Springs Water Treatment Plant, which included a Treatment Unit, Sand Filters, Sludge Thickener Tank, Transfer Pumping Station, Washwater Recovery Basin, Lime Silo, Chlorine Building, Vacuum Filter Building, Electrical Building, 1.5 MG Storage Tank and walkway modifications throughout the plant.

### Van Fleet Water Production Facility Expansion and Well APT, Polk County, Florida

**Structural Engineer of Record.** Responsible for the structural design and office engineering during construction of a $2.7 million water treatment plant expansion from a peak capacity of 3.0 MGD to 14.5 MGD. The water production facility, which is supplied by a wellfield, is in the Polk County Northeast Regional Utility Service Area (NERUSA). The following elements are included in the project: new high service pump station, new foundation and metal canopy for chemical storage and feed system, new foundation for precast concrete air-conditioned building housing controls/equipment, new generator foundation, new fuel tank foundation and ground storage tank rehabilitation included new stair to top of tank.

### Lift Station 5 Replacement, City of Orlando, FL

**Structural Engineer of Record.** Responsible for the structural design and office engineering services during construction of new $6.9 million 20-MGD submersible type pump station on the empty City owned land parcel adjacent to the existing lift station which will be demolished. The new lift station will be housed in a building with three rooms including a ventilated and screened pump room, an air-conditioned room for electrical and controls and a ventilated room for generator. Also included are a foundation for the fuel tank and a foundation for the odor control system. [

### Wet Weather Monitoring and Pumping System, City of Largo, FL

**Structural Engineer of Record.** Responsible for the structural design and office engineering during construction of an enhanced collection system and lift station replacement project $1.1 million Final Design (4 Lift Station Reconstruction, 2 Lift Station Rehabilitations and approximately 60,000 linear feet of Force Main), Bid Phase Services and Limited Construction Phase Services.

### Arlington East Filter Improvements, JEA - Jacksonville, FL

**Structural Engineer of Record.** Responsible for the structural design of a new $1.1 million expansion of the existing filtration system for the public access reuse system at the Arlington East Water Reclamation Facility (WRF). The project included a new foundation for the 2-MGD filter.

### Water Conserv II WRF Master Pump Station and Flow Equalization, City of Orlando, Florida

**Structural Engineer of Record.** Responsible for the structural design and office engineering services during construction of new $1.1 million 60-MGD wet-pit/dry-pit master pump station, new 3.5 MG circular pre-stressed concrete ground storage tank for flow equalization, conversion of existing plant master pump station into new equalization pump station and new influent junction box routing flow from influent sewer to new pump station.

### Wastewater Treatment Plant No. 3, Winter Haven, Florida

**Structural Engineer of Record.** Responsible for the structural design and office engineering services during construction for the $15.5 million 7.5 mgd upgrade to a reclaimed water plant that will now feature automatic backwash filters, a new chlorine contact basin, conversion of the existing chlorine contact basin into a dechlorination/reaeration basin, effluent and internal pumping systems. Additional upgrades included revising course bubble aeration system to a four-stage Bardenpho process within the existing tankage. Design included significant additions to the electrical and ancillary systems throughout the plant including three electrical buildings and two generator systems. This was a Construction Manager at Risk project with The Haskell Company.

### 3A/3B Holly Lakes Pump Station, South Florida Water Management District, Florida

**Structural Engineer.** As a part of a 60% design team, responsible for the structural design of a stormwater pump station and generator building for the 3A/3B Holly Lakes Area. These facilities are being developed by the SFWMD to restore flood control.

### S-5A Pump Station Refurbishment, Engineering During Construction, South Florida Water Management District, Palm Beach County, Florida

**Structural Engineer.** Construction of the S-5A Pump Station Refurbishment project (described in the following section) commenced in September 2016. As the project design engineer, BC provides Engineering During Construction Services throughout the construction project. Structural engineer in charge of design modifications to the project and for review of structural submittals, and requests for information.

### Existing Wastewater Treatment Plant Upgrades and Expansion, North Port, Florida

**Structural Engineer of Record.** Responsible for the structural design and office engineering services during construction for the $23 million 7.0 mgd upgrade to a reclaimed water plant that will now feature deep bed tertiary filters with control/blower/electrical building, clearwell, mudwell, a second chlorine contact basin, 2.5 mg storage tank, effluent and internal pumping systems. Additional upgrades included revising course bubble aeration system to a multistage BNR system with additional tankage, a fourth clarifier and expansion of the pretreatment and other ancillary systems throughout the plant.

# Robert E. Abordo, PE

## Experience Summary

Robert Abordo has over 46 years of electrical engineering design experience. His experience includes design of power systems and control components for water and wastewater treatment facilities, membrane and ozone generation facilities, emergency power generation and distribution, pumping stations, and water supply and distribution. Robert Abordo's experience encompasses all electrical engineering components of a project, including: studies, planning, conceptual designs, detailed designs, project management, construction services, startup, commissioning, design-build, and design-build-operate and engineer-procure.

**Assignment**

*Electrical*

**Education**

*MS, Electrical Engineering, University of the Philippines*

*BS, Electrical Engineering, University of the Philippines*

**Registration**

*Professional Engineer: Florida, Texas, California, Ohio, Virginia, Illinois*

**Experience**

*46 years*

**Joined Firm**

*2013*

**Relevant Expertise**

- *MV and LV Power Distribution Design and Construction*
- *MV and LV Standby Power Generation Design and Construction*
- *Pumps and Motor Controls*
- *Switchgear and Motor Control Centers*
- *MV and LV Variable Frequency Drives*
- *Overhead Power Distribution up to 69kV*
- *Short Circuit Studies*
- *Electrical Power Distribution Planning*

### Water Reclamation Facilities Upgrade, City of Cape Coral Department of Public Works, Cape Coral, FL

**Lead Electrical Engineer.** Robert served as the program lead electrical engineer for this $873M design- build program involving two major wastewater treatment plants expansions and a new RO water plant and several raw water well sites, which are already in operation. The electrical portion of the projects involved major upgrades for the 480Volt main switchgear and standby power for water, wastewater, and reclaimed water, collection, distribution, storage, treatment elements and full capacity standby power generation. Typical motor horsepower ranges from 100 to 600HP, 480V motors with variable frequency drives. The major electrical works include planning, design, construction services, and startup of multiple 2250kW standby generators, storage and high service pumping systems, headworks facilities, and liquid and solids process trains. The new Reverse Osmosis (RO) water treatment plant was designed with medium voltage (4.16kV) power distribution and 480V double-ended unit substations. The new well sites for the new RO Plant have portable generator hook-ups. Robert has also served as the lead electrical engineer for the new biosolids/sludge drying facility for the City and the new North Cape wastewater reclamation facility with membrane biological reactor (MBR) technology.

### North Regional WWTP Reclaimed Water Plant Expansion, Broward County Water and Wastewater Services' (BCWWS), Broward County, Florida

**Lead Electrical Engineer** responsible for the BODR, detailed design, bidding and permitting services, and engineering services during construction for the expansion of BCWWS' existing reclaimed facility to increase its firm rated capacity from 10 mgd to approximately 26 mgd. This project is a result of the Ocean Outfall Legislation. The expansion will treat secondary effluent to meet High Level Disinfection (HLD) standards as defined by the Florida Department of Environmental Protection (FDEP). The expansion is estimated at $53 million construction cost and includes construction of a new filter feed pump station, additional filters, chemical storage and feed, chlorine contact basins, reclaimed water pump station, electrical power distribution and requisite back-up emergency power.

### Falkenburg Advanced Wastewater Treatment Plant Expansion, Hillsborough County Utilities Department, Hillsborough County, FL

**Electrical Engineer.** Robert was responsible for the overall electrical design and implementation on this project, including field supervision during construction, plan reviews, and quality control. This project included design, construction, and startup phase consulting services for the expansion of the existing Falkenburg Advanced Wastewater Treatment (AWWT) Plant from 3 to 6 mgd and then, in a subsequent expansion, further expand the plant to 9 mgd. The project includes several 200HP 480V aeration mixers for the additional

treatment facilities, several 100HP 480V reuse water pumps and storage facilities to meet very strict discharge standards. This project also involved adding high service, horizontal split-case centrifugal effluent pumps and associated piping, a 5-MG storage tank, and an electrical building extension with new 2000kW standby generator with new double-ended metal enclosed switchgear.

### Amarillo High Service Pumping Station, City of Amarillo, Amarillo, TX

**Project Electrical Engineer.** Robert served as the project electrical engineer responsible for the preliminary design, final design and construction related services for this large pumping station involving medium voltage (4.16kV) 400 HP pump motors, metal clad switchgear, and medium voltage variable frequency drives. Robert Abordo provided inspection and start-up of the pumps and controllers and related SCADA for the pump station.

### Storm Water Treatment and Pumping Stations, South Florida Water Management District, West Palm Beach, FL

**Lead Electrical Engineer.** Robert served as the lead electrical engineer for the joint venture design with Burns and McDonnell on the $200M storm water treatment area and two large pumping stations. Storm water treatment STA 3 / 4 and STA 5 were the largest in the world at the time of construction. The project involves multiple automated gate controls and control buildings, and pumping stations with several 1000HP Fairbank Morse engine driven pumps. The project is one of several projects for the Everglades Restoration Project financed by the State and Federal Government.

### JEA Water Treatment Plants, Jacksonville Electric Authority, Jacksonville, FL

**Lead Electrical Engineer**. Robert served as the lead electrical engineer for the design and construction (EPCM) of two (2) new water treatment plants for the City. The project involves new raw water wells, chemical treatment and high service pump station with 1500kW standby generators.

### Sawgrass Water Treatment Plant, City of Sunrise Utilities Department, Sunrise, FL

**Project Electrical Engineer.** The Sawgrass Water Treatment Plant is a $15M, 18-mgd membrane softening (nanofiltration) facility with an initial installed capacity of 12 mgd. This project included several 250HP 480V motors for membrane feed pumps and high service pumps with variable frequency drives, two 1500-kW standby generators and 480-volt metal enclosed paralleling switchgear. Robert provided inspection, construction management and start up services for the parallel standby generators and the associated low voltage generator and utility switchgear.

### Pinehills Water Treatment Plant Expansion and Southeast Water Treatment Plant, Orlando Utilities Commission (OUC), Orlando, FL. **Project Electrical Engineer.** Robert was responsible for the electrical design and construction management portion of this $15M project involving an engineer, procure, construct and manage (EPCM) design-build approach. Both projects were ozone water treatment plants with (4) 250kW ozone generators treating hydrogen sulfide and providing primary disinfection. These projects required 4.16kV MV and 480V LV unit substations and switchgear to provide power to several high capacity ozone generators for water treatment. These projects were completed on time and on budget.

### Houston East Water Treatment Plant, City of Houston Utilities Department, Houston, TX.

**Lead Electrical Engineer.** Robert served as the lead electrical engineer responsible for the preliminary design, final design of the $90M design-build-operate conventional water treatment plant, with remote lake intake pumping station with several 200HP 480V raw water pumps, several 400HP 4.16kV high service pump motors and operations and laboratory building. The electrical design includes 13.8 kV double circuit overhead distribution line from the water treatment plant to remote lake intake pump station. Facilities underground power distribution was designed at 4.16kV. Robert provided inspection of the overhead power distribution system and start-up of the large pump motors and controllers.

### Tobacco Road Water Treatment Plant and Raw Water Pumping Station, City of Augusta Utilities Department, Augusta, GA.

**Lead Electrical Engineer.** Robert served as the lead electrical engineer responsible for the preliminary design, final design for the $50M project which includes MV paralleling metal clad switchgear with (3)- 1500kW medium voltage standby generators, several 4.16kV 400HP variable frequency drives for large raw water and finished water distribution pumps, plant SCADA and security systems.

# Hector Serrano, PE

## Experience Summary

Hector Serrano brings over 14 years of electrical engineering experience. Areas of expertise include the design of power systems, control and security components for water and wastewater treatment facilities and pumping stations, emergency power generation and distribution, and water supply and distribution. He has spent the majority of his career in South Florida and is currently working on key projects for SFWMD. Hector has is committed to helping STOF with their upcoming projects.

**Assignment**

*Instrumentation*

**Education**

*BS/BSc, Electrical Engineering, Florida International University*

**Registration**

*Professional Engineer: FL #77767*

**Experience**

*15 years*

**Joined Firm**

*2016*

**Relevant Expertise**

- *Power semi-conductor devices (i.e., thyristors, insulated gate bipolar transistors, MOSFETs, diodes)*
- *Electronic components*
- *A.C./ D.C. circuits, power supplies, stepper motors*
- *Embedded Software Development for MCUs*
- *IP66,67/NEMA equivalent enclosures for wet locations*

### North Regional WWTP Reclaimed Water Plant Expansion, Broward County Water and Wastewater Services' (BCWWS), Broward County, Florida

**Electrical and I&C Engineer**. BCWWS' existing reclaimed facility to increase its firm rated capacity from 10 mgd to approximately 26 mgd. This project is a result of the Ocean Outfall Legislation. The expansion will treat secondary effluent to meet High Level Disinfection (HLD) standards as defined by the Florida Department of Environmental Protection (FDEP). The proposed expansion is estimated at $53 million construction cost and includes construction of a new filter feed pump station, additional filters, chemical storage and feed, chlorine contact basins, reclaimed water pump station, electrical power distribution and requisite back-up emergency power. Additional elements include integration of existing/aging infrastructure with proposed infrastructure, maintenance of operations during extensive electrical/structural/process tie-in, design process to handle wide-ranging operating conditions from startup to buildout, and coordination between BCWWS operations and engineering teams and eight subconsultants working on various elements.

### Miami-Dade Pump Station Improvement Program, Task 1, Miami-Dade, Florida

**Project Engineer.** Responsible for assessing and evaluating the condition of existing electrical equipment in sewage lift stations. Electrical equipment starting at the utility service entrance, onto the pump control panels (pump motor controllers, well level sensing instruments, telemetry panels) and ending at the electric pump motors.

### Concentrate Recovery Pilot Plant Membrane Skid, Sawgrass Water Treatment Plant, Sunrise, Florida

**Field Engineer.** Developed electrical plans for the temporary power supply, installation and operation of a cost effective alternative water supply Experimental Pilot Study Program. Also provided electrical design support to the team responsible for the Reverse Osmosis (RO) process of the Pilot Plant. Provided onsite troubleshooting and startup services to onsite pilot plant engineer and operator for the electrical portions of the skid mounted plant's chemical metering pumps, transfer pumps, Clean-In-Place (CIP) cartridge filter, 1st and 2nd stage RO pressure vessels and in-line 1500W heating element used for the CIP filter.

### SCADA (I&C) Extension of Staff, South Florida Water Management District, Palm Beach County, Florida

**Project Manager.** In this 12-month assignment performs work associated with installation contract deliverables, SCADA integration, and site inspection. This

includes reviewing design documents and drawings for upcoming projects, performing field inspections of SCADA related components during construction of District projects, verifying conformity to drawings and specifications, managing field installation of RTUs and peripheral components, performing system administration functions, managing appropriate computer resources to support information needs within the SCADA Design and Installation Unit, and research and development of instrumentation and other SCADA components in laboratory.

### Grand Coulee SCADA Replacement, US Bureau of Reclamation, Grand Coulee, Washington

**Design Engineer.** Responsible for the preparation of installation drawings for the replacement of existing legacy type RTUs (Remote Terminal Units) at the Grand Coulee Hydro-electric Dam with the more modern Generic Data Acquisition and Control System (GDACS). Duties for the preparation of installation drawings for the power circuit-breaker DC controls and protective relaying components of 11.95kV and 115kV switchyards which distribute power from hydro-electric power generation units.

### Department-Wide Instrumentation, Control and Computer Systems Program of Water and Wastewater Services, Detroit Water and Sewerage Department, Detroit, Michigan

**Field Engineer.** Provided onsite design and construction management support. Assisted in the retrofitting of an 859-Million Gallon per Day (MGD) wastewater treatment plant computer control system, providing a new department-wide SCADA system that enabled remote monitoring and control of the treated water system (TWTS), wastewater collection system (WWCS) and storm system. Detailed design and construction of a plant-wide Distributed Control System (DCS).

# Viviana Villamizar

## Experience Summary

Ms. Villamizar possesses over 7 years of experience in research, development and design in the areas of environmental and water resources engineering and management; hydrology, hydraulics, GIS mapping and geo-data processing; wastewater reuse; waste management; and sustainability. She has a thorough knowledge of the GIS databases available for South Florida, which are maintained by federal and state agencies (USGS, SFWMD, Miami-Dade County, and Department of Interior). She holds expert level knowledge of applications of GIS tools for mapping and report generation, geospatial analysis, digitization, geodatabase development and maintenance, data creation and editing, metadata development. In addition, Ms. Villamizar has supported business development, prepared proposals, project execution and developed training programs for multiple projects in the areas of sustainability and water management.

**Assignment**

*Project Engineer*

**Education**

*MS, Environmental Engineering, Florida International University*

*BS, Environmental Engineering, Florida International University*

*AA, Industrial Engineering, Florida International University*

**Experience**

*7 years*

**Joined Firm**

*2016*

**Relevant Expertise**

- *Sustainability*
- *Water Resources*
- *Drainage Design*
- *Low Impact Development*
- *Hydrology*
- *Hydraulics*
- *Stormwater Management*
- *Environmental Engineering*

### North District Wastewater Treatment Plant (NDWWTP) Sludge Forcemain Condition Assessment, Miami Dade Water and Sewer Department (MDWASD), Miami, Florida

**Project Engineer.** Miami-Dade Water and Sewer Department (MDWASD) has requested that Brown and Caldwell (CONSULTANT) undertake additional activities related to the sludge forcemains which transfer sludge from the North District Wastewater Treatment Plant (NDWWTP) to the Central District Wastewater Treatment Plant (CDWWTP). Degritted primary sludge, skimmings, and oxygen waste activated sludge from the North District Wastewater Treatment plant (NDWWTP) are transferred to the Central District Wastewater Treatment Plant (CDWWTP) for sludge processing. The combined sludge, known as transfer sludge (approximately 3.0 MGD), is currently pumped into either: 1) an approximately 15-mile pipeline that goes directly from the NDWWTP to the CDWWTP sludge concentrators, 2) a shorter (approximately 7 mile) pipeline that empties into an interceptor that goes to the head of the CDWWTP, or 3) through both forcemains with divided amounts of transfer sludge. The forcemains have been in continuous service for over 35 years. Aside from trucking the transfer sludge, these forcemains represent the only way that the NDWWTP can use to convey its sludge to the CDWWTP where it is processed.

### North County Reuse Feasibility, Broward County Water and Wastewater Services' (BCWWS), Broward County, Florida

**Project Engineer**. This project established reclaimed water demand and equalization recommendations; assessed water quality constraints and available source water for "scalping" applications; evaluated reclaimed water treatment alternatives; conceptually laid out transmission and distribution infrastructure; and developed conceptual cost estimates for the implementation alternative.

### Broward 3BC Sanitary Sewer System, Broward County Water and Wastewater Services' (BCWWS), Broward County, Florida

**Project Engineer**. Performed analysis and evaluation to determine the feasibility of implementing sanitary sewer within unsewered areas in Broward County. The analysis provided consisted of three different alternatives proposed to provide sanitary sewer service to some areas in the 3BC service area that still rely on septic systems including the North Perry Airport. The evaluation of each alternative included capacity of neighboring systems, layout of proposed system, and cost estimate comparison.

### North District Wastewater Treatment Plant (NDWWTP) Chlorine and Toxicity Study, Miami Dade Water and Sewer Department (MDWASD), Miami, Florida.

**Project Engineer.** The North District Wastewater Treatment Plant (NDWWTP) has a permitted surface water discharge limit of 100 million gallons per day (MGD) and a current annual average flow of approximately 80 MGD. The facility operates under a Florida Domestic Wastewater Facility Permit issued by the Florida Department of Environmental Protection (FDEP). Testing will be performed to evaluate the minimum and maximum TRC limits at the chlorine monitoring location that will provide the disinfection requirements for fecal coliform and enterococci while maintaining whole effluent toxicity limits.

### Big Coppitt Wastewater Treatment Plant, Florida Keys Aqueduct Authority, Big Coppitt, Florida

**Project Manager.** Pre-design expansion of the advanced water quality wastewater treatment plant on Big Coppitt Key for the Florida Keys Aqueduct Authority (FKAA). This plant employs sequencing batch reactor technology (SBRs), produces reuse quality water and includes a storage and distribution pumping system.

### Drainage Improvements Throughout Miami-Dade County, City of Miami, City of Doral, Village of Pinecrest and Other Municipalities, Florida

**Project Engineer.** Supported the development of an ICPR model to evaluate existing conditions and proposed drainage improvements, 100 percent design drawings, specification, drainage analysis report, permitting and cost estimates.

### East/West Fairview Street and South Bayshore Lane Drainage Improvements Project, City of Miami, Florida

**Engineer.** Assisted in preparing a drainage report and conceptual plans for a coastal community that includes drainage wells and proposed pump stations. She coordinated with the City of Miami on feasible alternatives to alleviate flooding in the immediate area and prevent wave action from overtopping the low elevation seawall.

### Stormwater Management Master Plan, Village of Pinecrest, Florida

**Project Engineer.** Assisted in the development of the Stormwater Management Master Plan Update for the Village of Pinecrest. This project involved data collection from local, state, and federal sources; the refinement and analysis of XP-SWMM hydraulic and hydrologic models; ranking of high risk priority sub-basins, a future impact analysis of potential projects for high risk sub-basins; the development of planning level cost estimates; and the development of a capital improvement plan (CIP) to guide the Village in defining and prioritizing future projects.

### Low Impact Development (LID), City of Doral, Florida

**Project Engineer.** Assisted in the development a Low Impact Development (LID) Master Plan to assist the City in maximizing implementation of LID Integrated Management Practices to minimize impacts from anticipated new development and/or redevelopment projects. The Master Plan also provided guidance for LID site planning, hydrologic analysis, and erosion and sediment control practices. As part of the Master Plan development, a Public Outreach Program was implemented to educate the residents and developer regarding the benefits of implementing LID practices and obtain input from these stakeholders to build consensus on the final recommendations of the LID Master Plan.

### NW 47th Avenue Drainage Design Project, Florida Department of Transportation (FDOT), District 6, Florida

**Engineer.** Assisted in the development for the NW 47th Avenue Drainage Design project which is part of ADA's FDOT District 6 Districtwide Drainage Design and Plans Review Consultant Contract. Ms. Villamizar performed simulations using the conceptual ICPR model developed as part of the PD&E study and the latest existing information available for the project to determine the hydraulic capacity of the existing drainage systems and verifying pre-development runoff rates. The analysis of the hydraulic capacity of the existing drainage systems will be performed with ICPR, using the criteria outlined in the ICPR Applications Manual (ICPR-AM).

**Harrison Barron, E.I.**
*Project Engineer*
**Holtz Consulting Engineers, Inc.**

Harrison Barron, a graduate of the University of Florida, joined Holtz Consulting Engineers, Inc. in October 2016. Since starting at HCE, he has worked as a project engineer on several successful hydrogeologic, water distribution, and wastewater collection projects, and has provided permitting and regulatory assistance to various clients. Prior to joining HCE, Harrison worked in CH2M Hill's Jacksonville and Fort Lauderdale offices on a number of deep well injection and raw water production hydrogeologic projects.

## Project Related Experience

**Okeechobee Clean Energy Center Deep Injection Well system – FPL –** Mr. Barron provided engineering support services for the design, permitting, contractor procurement, and construction oversight of one exploratory well, two deep injection wells, and one dual-zone monitor well for the FPL Okeechobee Clean Energy Center. The deep injection wells will be used for the disposal of cooling water related to the power generation process. HCE prepared draft and final drawings and specifications for the wells, prepared construction and operational permit applications. During construction, HCE reviewed shop drawings, answered contractor RFIs, performed site visits to ensure the construction conformed to the technical design requirements, prepared punchlists, prepared record drawings, operation and maintenance manuals, and close-out documents.

**Port St. Lucie Northport WWTP Site Injection Well Plugging and Abandonment –** Mr. Barron worked with McNabb Hydrogeological Consulting on the project to plug and abandon the old, unused deep injection well at the site of the decommissioned Northport WWTP, which now is the location of a master booster wastewater pump station. Mr. Barron assisted in developing the deep well plugging and abandonment plan and assisted in preparation of the design documents depicting the work to plug and abandon the well and make various site improvements.

**Island Water Reclamation Facility Deep Injection Well MIT and Flow Meter Replacement – Fort Pierce Utility Authority –** Mr. Barron worked with McNabb Hydrogeological Consulting on the project to complete Mechanical Integrity Testing, replacement of the existing venturi flow meter with a magmeter, and rehabilitation of the injection well casing surface features on the IWRF deep injection well system. Mr. Barron assisted in developing the deep well MIT and Discharge Impact Minimization plans submitted to FDEP and assisted in coordinating testing and replacement of the existing flowmeter to minimize use of the site's emergency outfall disposal into the Indian River Lagoon.

**Ocean Outfall Legislation Program – Miami-Dade Water and Sewer Department –** Miami-Dade WASD was tasked with implementing an injection well expansion project of unprecedented scale to meet requirements of new Ocean Outfall Legislation. Mr. Barron assisted with permitting and planning for the future construction of between 20 and 30 new large (24-30 inch) diameter deep injection wells including development of construction permit applications for dual-zone monitoring wells, Class I Municipal/Industrial Injection wells, and Exploratory Wells. Permitting efforts included development of large scale areas of review, development of design plans and associated construction procedures, testing/monitoring plans, plugging and abandonment plans, and analysis of local/regional geologic and hydrogeologic settings.

**G.T. Lohmeyer Deep Injection Well Operation Permit Renewal – City of Fort Lauderdale –** The City of Fort Lauderdale owns and operates the G.T. Lohmeyer Wastewater Treatment Facility which requires renewal of the FDEP UIC operating permit every five years for the plant's five Class I Municipal injection wells. Mr. Barron successfully renewed the UIC operating permit for the GTL WWTP and prepared the complete permit renewal package including completion of the permit renewal application forms, area of review analysis, review of current and historical water quality trends, and general assessment of facility conditions for the G.T. Lohmeyer injection well system.

**Cudjoe Key Sewer Progam Plan – Florida Keys Aqueduct Authority –** Mr. Barron assisted FKAA in providing construction management and regulatory assistance during the construction of one Class I Industrial injection well and its associated dual-zone monitoring well at the Cudjoe Key Advanced Water

Reclamation Facility including development of plans for and supervision of casing settings, drilling oversight, geophysical logging, and water quality analysis.

**Rehabilitation and MIT of West Water Treatment Plant Injection Well– City of Deerfield Beach –** Mr. Barron assisted the City of Deerfield Beach with investigating, rehabilitating, and completing Mechanical Integrity Testing of their West Water Treatment Plant Deep Injection Well which had suffered severe losses in injectivity due to unexplained and excessive precipitation within the final casing. The project included investigating causation and extent of damage, development of a multi-faceted rehabilitation and MIT plan, and preliminary design for preventative measures to eliminate future risk of losses of injectivity.

## Education

Bachelor of Science in Environmental Engineering, University of Florida, 2015

## Registration

Engineer-Intern, State of Florida.

**Curtis Robinson, P.E.**
*Senior Engineer*
**Holtz Consulting Engineers, Inc.**

Curtis Robinson has worked with Holtz Consulting Engineers, Inc. since 2009. Mr. Robinson has 14 years of experience in the design, permitting and construction administration of water, wastewater, and reclaimed water projects. He also has extensive experience with deep injection well systems.

## Project Related Experience

**Port St. Lucie Northport WWTP Site Injection Well Plugging and Abandonment –** Holtz Consulting Engineers (HCE) worked with McNabb Hydrogeological Consulting (MHC) on the project to plug and abandon the old, unused deep injection well at the site of the decommissioned Northport WWTP, which now is the location of a master booster wastewater pump station. Curtis was the Engineer of Record for the design documents depicting the work to plug and abandon the well and make miscellaneous site improvements, and assisted with the preparation of the deep well plugging and abandonment plan submitted to FDEP.

**Port St. Lucie James E. Anderson, Southport, and Westport Mechanical Integrity Tests –** HCE and MHC assisted the City of Port St. Lucie with the performance of mechanical integrity testing for three deep injection wells. The deep well systems were located at a wastewater treatment plant, a wastewater master repump facility, and a water treatment plant. The work included the preparation of a plan and technical specifications, assistance with contractor selection, MIT field services, and preparation of MIT testing reports.

**MCU Tropical Farms and N. W/WWTP Deep Injection Well Permitting and Improvements –** HCE and MHC developed a repair for a leak in the deep injection well packer at the base of the injection tubing for Injection Well No. 2 (IW-2) located at the MCU North Water/Wastewater Treatment Plant in Jensen Beach FL. HCE conducted site visits and meetings with the FDEP UIC and procured a permit for the repair. HCE and MHC performed construction oversight during the repair. HCE also designed, bid, and provided construction assistance for the replacement of valves and piping and the well head as well as the replacement of 12-inch, 16-inch, and 20-inch pipe transferring water to IW-2.

HCE and MHC also replaced two monitor tubes with a dual-zone monitor well at the North WWTP. The work included the design, permitting, bidding, and construction oversight and monitoring. The dual-zone monitor well was designed to utilize existing shallow groundwater pad monitor wells and an existing concrete containment slab. Value engineering was performed with the contractor and owner. The existing monitor tubes were abandoned after the new monitor well was placed into service.

**FPL Okeechobee Clean Energy Center Deep Injection Wells-** HCE and MHC are in the process of designing, permitting, testing, and providing construction oversight for one exploratory well, two deep injection wells, and a dual-zone monitoring well at the facility. The deep injection wells will be used as a means of disposing of cooling water from the electrical production units located at the facility. The exploratory well will be constructed first to confirm the geology at this site is conducive to deep-well injection. The exploratory well will be converted to an injection well and a second injection well and dual-zone monitoring well will be constructed adjacent to the initial well.

**Seacoast Utility Authority Replacement of the PGA WWTP Dual Zone Monitor Well —** HCE provided design, permitting, procurement, and construction administration services for a new dual zone monitor well at the PGA WWTP. The new dual zone monitor well was constructed within the existing deep injection well containment pad, and the existing monitor well was plugged and abandoned.

## Education

Bachelor of Science in Civil Engineering, Missouri S&T, 2001
Master of Science in Engineering Management, Missouri S&T, 2003

## Registration

Professional Engineer, Registration No. 65685, State of Florida

Appendix B

# Certificate of Insurance



# CERTIFICATE OF LIABILITY INSURANCE

5/31/2020

DATE (MM/DD/YYYY) 5/17/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

| | |
|---|---|
| PRODUCER Lockton Companies<br>444 W. 47th Street, Suite 900<br>Kansas City MO 64112-1906<br>(816) 960-9000 | CONTACT NAME:<br>PHONE (A/C, No, Ext):<br>FAX (A/C, No):<br>E-MAIL ADDRESS: |
| INSURED 1052132<br>BROWN AND CALDWELL<br>AND ITS WHOLLY OWNED SUBSIDIARIES<br>AND AFFILIATES<br>201 NORTH CIVIC DRIVE, SUITE 300<br>WALNUT CREEK CA 94596 | INSURER(S) AFFORDING COVERAGE — NAIC #<br>INSURER A : Hartford Fire Insurance Company — 19682<br>INSURER B : Property and Casualty Ins Co of Hartford — 34690<br>INSURER C : Lloyds of London<br>INSURER D : Twin City Fire Insurance Company — 29459<br>INSURER E :<br>INSURER F : |

**COVERAGES** * **CERTIFICATE NUMBER:** 2256341 **REVISION NUMBER:** XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| INSR LTR | TYPE OF INSURANCE | ADDL INSD | SUBR WVD | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS | |
|---|---|---|---|---|---|---|---|---|
| A | [X] COMMERCIAL GENERAL LIABILITY<br>[ ] CLAIMS-MADE [X] OCCUR<br>GEN'L AGGREGATE LIMIT APPLIES PER:<br>[ ] POLICY [ ] PRO-JECT [ ] LOC<br>[ ] OTHER: | N | N | 37CSEQU1172 | 5/31/2019 | 5/31/2020 | EACH OCCURRENCE<br>DAMAGE TO RENTED PREMISES (Ea occurrence)<br>MED EXP (Any one person)<br>PERSONAL & ADV INJURY<br>GENERAL AGGREGATE<br>PRODUCTS - COMP/OP AGG<br>$ | $ 2,000,000<br>$ 2,000,000<br>$ 10,000<br>$ 2,000,000<br>$ 4,000,000<br>$ 4,000,000<br>$ |
| A | AUTOMOBILE LIABILITY<br>[X] ANY AUTO<br>[ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS<br>[X] HIRED AUTOS ONLY [X] NON-OWNED AUTOS ONLY | N | N | 37CSEQU1173 | 5/31/2019 | 5/31/2020 | COMBINED SINGLE LIMIT (Ea accident)<br>BODILY INJURY (Per person)<br>BODILY INJURY (Per accident)<br>PROPERTY DAMAGE (Per accident)<br>$ | $ 2,000,000<br>$ XXXXXXX<br>$ XXXXXXX<br>$ XXXXXXX<br>$ XXXXXXX |
| | [ ] UMBRELLA LIAB [ ] OCCUR<br>[ ] EXCESS LIAB [ ] CLAIMS-MADE<br>[ ] DED [ ] RETENTION $ | | | NOT APPLICABLE | | | EACH OCCURRENCE<br>AGGREGATE<br>$ | $ XXXXXXX<br>$ XXXXXXX<br>$ XXXXXXX |
| B<br>D | WORKERS COMPENSATION AND EMPLOYERS' LIABILITY<br>ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N [N] N/A<br>(Mandatory in NH)<br>If yes, describe under DESCRIPTION OF OPERATIONS below | N/A | N | 37WNQU1170<br>37WBRQU1171 | 5/31/2019<br>5/31/2019 | 5/31/2020<br>5/31/2020 | [X] PER STATUTE [ ] OTH-ER<br>E.L. EACH ACCIDENT<br>E.L. DISEASE - EA EMPLOYEE<br>E.L. DISEASE - POLICY LIMIT | <br>$ 2,000,000<br>$ 2,000,000<br>$ 2,000,000 |
| C | PROFESSIONAL LIABILITY | N | N | LDUSA1900482 | 5/31/2019 | 5/31/2020 | $2,000,000 PER CLAIM & AGGREGATE | |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

**CERTIFICATE HOLDER**

2256341
SPE-XX
SPECIMEN

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Joseph M Agnello

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Brown AND Caldwell

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