Charlotte County Board of County Commissioners

RFP NO. 2023000393

PROFESSIONAL SERVICES

FOR

CAPE HAZE

WATER QUALITY IMPROVEMENT DESIGN

Submitted to:
Charlotte County
Purchasing Division
18500 Murdock Circle, Suite 344
Port Charlotte, Florida 33948-1094

Submitted by:

GWE
Giffels-Webster
Engineers, Inc.

900 Pine Street, Suite 225
Englewood, Florida 34223
Ph. (941) 475-7981
Fax. (941) 474-4285
Contact: Jonathan H. Cole, P.E.
Email: jcole@gwefl.com

April 11, 2023
GWE: 2023.11

GWE GIFFELS-WEBSTER ENGINEERS, INC.

April 10, 2023 **REF: 2023.11**

Senior Division Manager – Purchasing
Charlotte County Administration Complex
18500 Murdock Circle, Suite 344
Port Charlotte, FL 33948-1094

RE: RFP NO. 2023000393 – DESIGN CAPE HAZE WATER QUALITY IMPROVEMENT

Giffels-Webster Engineers, Inc. (GWE) is pleased to present this proposal to provide professional engineering services for the subject RFP. GWE has extensive experience specifically with *septic to sewer* projects of this nature and we are very interested in providing the planning, utility design, structural, CEI, funding assistance, and related services for the Cape Haze Water Quality Improvement project.

Our main office is located right here in Englewood just a few miles up the road from the Cape Haze Project. Our proximity allows for minimal travel time to the site which will make the design process far more efficient. Moreover, we have available office space for CCU staff so a Cooperative Work program could be established between GWE and CCU staff throughout the design and construction process.

Projects that involve installing new or replacement utilities in developed areas with existing homes are difficult but exactly the types of projects that we specialize in. We have successfully designed many large scale *septic to sewer* projects for over 25 years starting with the Englewood Water District, Sarasota County, Martin County, and Charlotte County. We are a local firm that has experienced engineers, technicians, and inspectors who can provide services for the County in a cooperative and cost-effective manner and have a history of "going the extra mile" to get jobs done right without claims for extras.

Our experience, as shown in this submittal package, reflects our vast experience with *septic to sewer* projects, just like this Cape Haze Project.

As called for in the RFP, I certify that this proposal was made without collusion with any other person or entity submitting a proposal pursuant to this RFP. Also, this is to confirm that I, Jonathan H. Cole, as an authorized officer of Giffels-Webster Engineers, Inc., am allowed to make representations on behalf of the firm.

Enclosed please find our proposal package submitted as one (1) original unbound, three (3) bound, signed identical copies, and one (1) electronic identical copy in PDF format on a flash drive. Thank you for the opportunity to offer our services for this project.

Sincerely,
Giffels-Webster Engineers, Inc.

Jonathan H. Cole, P.E., President

CHARLOTTE COUNTY – RFP NO. 2023000393

DESIGN CAPE HAZE WATER QUALITY IMPROVEMENT

TABLE OF CONTENTS

SECTION I:
TEAM PROPOSED FOR THIS PROJECT

SECTION I: PROPOSED TEAM

A. Background of the personnel

The proposed team consists of Giffels-Webster Engineers, Inc. (GWE) for all design, Meridian Group of South Florida, Inc. for the survey, Suncoast Ecological Services, LLC for environmental, George F. Young, Inc. for subsurface utility exploration, Universal Engineering Sciences for geotechnical, C&W Engineering, Inc. for electrical, ACI, Inc., for archeological, and Terrescape, Inc. for landscaping.

This same core design personnel worked with CCU on East/West Spring Lake, Phase II Ackerman Countryman Wastewater Expansion Program (currently under construction), and is now working on Lake View/Midway which is under design. Our team already knows the constraints, the public issues, the County personnel, and the project background. Pursuant to RP-23C, Mr. Jonathan H. Cole, (the Principal-in-Charge) and Mr. Dennis Croyle, (Project Manager and Lead Designer), within the prime firm will not be substituted without the express permission of the County.

1. Project Management

Jonathan H. Cole, P.E., Principal-in-Charge

The President of Giffels-Webster Engineers, Inc. and the Principal-in-Charge for the project will be Mr. Jonathan H. Cole, P.E. Mr. Cole has over 40 years of municipal design experience for large utility projects.

Mr. Cole is a Professional Engineer registered in the States of Florida, Connecticut, New Hampshire, Kansas, and Nebraska. He graduated from the University of Connecticut in 1979 with a Bachelor of Science (B.S.) Degree in Civil Engineering and was formerly the County Engineer of Charlotte County, Florida. Mr. Cole is the President of Giffels-Webster Engineers, Inc., a Florida corporation.

- Mr. Cole has been the Principal-in-Charge on over two dozen large septic to sewer projects over the last 25 years for the Englewood Water District, the Counties of Charlotte, Sarasota, and Martin.
- Mr. Cole has been the EOR for Charlotte County's Spring Lake Contract A-D and El Jobean vacuum systems.
- He has expertise in Master Planning and Design/Contract Administration for large-scale utility projects.
- Utility Infrastructure Design/FDOT Utility JPA plans for utility replacement for road projects
- SRF Financial Support for large scale utility projects
- Expert Witness for private or municipal civil, utility system, and construction projects

Dennis J. Croyle, P.E., Project Manager / Engineer-of-Record (Lead Designer)

Mr. Croyle will be the Project Manager and Engineer of Record (Lead Designer) for this project. Mr. Croyle is Vice President of Giffels-Webster Engineers and is a graduate of the University of Florida with a Bachelor of Science in Civil Engineering. He has provided lead design roles in all the Charlotte County Utilities vacuum sewer projects including Spring Lake Contract A, B, and C, Contract D, Ackerman, El Jobean, and Lake View/Midway. As well as many other vacuum sewer related projects throughout the State of Florida including Martin County, the City of Port St. Lucie, the City of North Port, Hillsborough County, Englewood Water District, and Sarasota County.

- Mr. Croyle was the project manager for the large Charlotte County East/West Spring Lake project.

- He is the Engineer of Record and Lead Designer for the Phase II Ackerman Countryman Wastewater Expansion Program currently under construction and Lake View/Midway ongoing design. He is directly involved with all aspects of the project including preliminary engineering, meetings, zoning requirements, hydraulic calculations, coordinated plan production and FDEP permitting, assisted with CCU with SRF funding, building permit correspondence, construction administration, shop drawing review, and resolving issues during design and construction phases. He understands what it takes to reach the finish line for large scale utility projects, especially vacuum sewer projects, and works well coordinating the multiple entities necessary for successful completion.

2. Other Key Personnel

Mr. Cole and Mr. Croyle will be supported by the following staff with all design work at our Englewood office:

Kendra Kotlarski, EI

Ms. Kotlarski is a graduate of Florida Gulf Coast University in Fort Myers, Florida. She earned a Bachelor of Science in Civil and Environmental Engineering. She has recently successfully passed the PE exam and is on the path to becoming a Professional Engineer. While in school, Kendra interned at Charlotte County Utilities and brings a knowledge of utilities, hydraulics, water resources, permitting, and computer and design skills to the Giffels-Webster Engineers team.

As an Engineer Intern at GWE, Kendra has made significant contributions to several utility projects and primarily assists with the planning and design aspects of *septic to sewer* projects.

Notable projects Kendra has worked on include the CCU Ackerman Countryman Phase 2 Vacuum Project, Hillsborough County Ruskin and Wimauma Septic to Sewer Conversion Program, City of Venice Bay Indies Utility Relocations Phases 1 and 2, City of Punta Gorda: Charlotte Park Septic to Sewer Project, Martin County Port Salerno New Monrovia Vacuum Sewer Project, and the Martin County Rocky Point Project. Kendra is responsible for day-to-day tasks, including project management assistance, coordination with the Client, reviewing plan production, vacuum modeling, and permitting.

Andrew J. Wickerson, P.E., Senior Design Engineer

Mr. Wickerson has over 20 years of experience as a Civil Engineer and will be serving as the Engineer for site design and assisting Dennis with DRC and zoning permitting for the pump station. He has experience in the design, permitting, and management of engineering projects.

As a senior engineer, he is responsible for site design layout, grading, stormwater management, and submittal to regulatory agencies for permit approval, as well as project management. He was a key team member in the Ackerman Wastewater Expansion Project and El Jobean, participating in the site designs and drainage improvements.

Kevin E. Furniss, Senior Designer

Mr. Furniss has been with Giffels-Webster Engineers, Inc. (GWE) for 34 years. Kevin is responsible for plan production, complex design, conflict detailing, and drafting, and has over 25 years of experience in design specifically for large-scale *septic to sewer* projects.

He has been the key designer on every one of GWE's large-scale *septic to sewer* projects since the mid 1990's including the CCU East/West Spring Lake project and Ackerman project.

Kevin's attention to detail, coupled with his vast experience with utility design is a real asset to both GWE and its clients, like CCU. Kevin was also the key designer for the complex CCU utility system for both the Midway widening, as well as the Olean Boulevard project recently completed by Charlotte County.

Christopher Orren, Utility Designer
Mr. Orren has over 27 years of experience as a Utility Designer/Draftsman. He is proficient in AutoCAD®, Civil 3D, ESRI ArcGIS, Civil Surveying & Aerial Imaging Programs, EPIC-2D/3D, and HULL Finite Element Analysis (FEA). Mr. Orren has been involved in utility design, field survey and data collection, drafting, Maintenance of Traffic (MOT), and Best Management Practices (BMP) of numerous public and private sector projects.

Thomas L. Shaw, Structural Designer – Vacuum Station Design
Mr. Shaw has over 35 years of experience in designing and building residential and light commercial projects in Southwest Florida. As a licensed contractor, he is experienced in all phases of building design and construction. Tom will develop any structure plans working within the constraints of the site and the requirements of the components, as well as meeting applicable state building codes. He has designed well over a dozen pump stations and is very familiar with the requirements.

Randy Blackwell, CEI Construction Administrator
Mr. Blackwell heads up our construction administration and inspection department. He has over 30 years of experience and is responsible for all construction administration including managing the field inspectors, contractors, and in-house design staff during the construction of the project.

He is well versed in all construction aspects of sewer systems and is currently managing the Martin County Golden Gate vacuum project under construction.

3. Consultants

SURVEY - Meridian Group of South Florida, Inc.

Joseph E. Trott, P.S.M., Project Manager/Principal
Mr. Joe Trott is the owner/president of Meridian Group of South Florida, Inc., and is a Florida licensed surveyor and mapper. He has over forty-five (45+) years of survey project management experience for a wide range of projects located in Southwest Florida. Joe is familiar with Charlotte County Utilities' minimum drawing requirements having performed record drawings for all the *septic to sewer* projects. Mr. Trott provides design surveys, control surveys, boundary and topographic surveys, right-of-way surveys, hydrographic surveys, mean high water surveys, route surveys, construction stake out, and as-built surveys.

ELECTRICAL AND I&C DESIGN – C & W Engineering, Inc.

Michael Guida, P.E., Project Manager/Principal
Mr. Guida is an Electrical Engineer in Florida and has approximately thirty-seven (37) years of experience and has designed the electrical components of numerous large electrical control systems including several vacuum stations. He will be providing the base electrical instrumentation and control (I&C) design drawings. He will provide the electrical design oversight and review for this project which we anticipate includes power distribution, panel boards, arch-flash study, generator, lighting system, and alarm system in accordance with the NEC Codes.

GEOTECHNICAL - Universal Engineering Sciences

Adam Dornacker, P.E., Geotechnical Department Manager
Mr. Dornacker is the Geotechnical Department Manager of the Universal Engineering Sciences (UES) Fort Myers Branch office. Mr. Dornacker has over eight (8) years of experience in his field in the local market. His experience includes foundation design analysis and recommendations, foundation installation monitoring, as well as field and laboratory testing of soil and concrete. Mr. Dornacker is responsible for managing and coordinating all soil investigation work and rock investigations that will be necessary for this project.

ENVIRONMENTAL AND PROTECTED SPECIES ASSESSMENTS - Suncoast Eco Services

Jennifer Krajcir, Project Manager/Principal

Ms. Krajcir specializes in working in Florida's upland and wetland environments in Southwest Florida. Ms. Krajcir will serve as the Environmental Specialist with responsibilities including evaluating environmental aspects of land; procurement of local, state, and federal permits; and permit compliance, wetland jurisdictional determinations and protected species assessments; "Grand" or "Heritage" tree assessments; and responsible for design and preparation of mitigation plans, monitoring plans, and wildlife management plans. She also provides planting plans, exotic removal plans, and vegetation removal plans; assembly and tracking of wetland permit applications for local, state, and federal agencies; field data collection including mitigation monitoring, water quality monitoring, and submerged resource surveys.

ARCHEOLOGICAL, HISTORICAL INVESTIGATIONS, AND CULTURAL REQUIRMENTS – ACI, Inc.

Marion Almy, RPA, Project Manager/Principal

Ms. Almy is the founding Principal and President of Archaeological Consultants, Inc. (ACI), which is a Woman Owned Minority Business Enterprise. She has 45 years of cultural resource management experience throughout Florida. She manages projects for a diversity of public and private entities including the Florida Department of Transportation, Florida's Turnpike Enterprise, the USDA Forest Service, South Florida, Southwest Florida and Suwannee River Water Management Districts, and various counties, as well as large-scale projects for private corporations. She represents clients in meetings with regulatory agencies, including the Florida State Preservation Office, the US Army Corps of Engineering, the US Coast Guard, the Federal Bureau of Prisons, the National Park Service, and federally recognized Native American tribes.

LANDSCAPING – Terrescape, Inc.

Yvonne R. Hall, RLA, Project Manager/Principal

Terrescape, Inc. is a Florida Corporation providing Landscape Architectural and Landscape Design services for the project. Yvonne Hall is the principal provider of design services. Ms. Hall has 30 years of experience in Landscape Architecture and Landscape Design in the West Florida Region. Her project management experience includes construction supervision and interdisciplinary coordination. She is an expert in site analysis and in developing appropriate solutions considering all the various disciplines involved in the specific project.

SUBSURFACE UTILITY EXPLORATION (SUE) - George F. Young, Inc.

Kevin Humbert, Utility Project Manager

Mr. Humbert is a project manager and will be responsible for the project Subsurface Utility Engineering (SUE) and coordination. When it comes to the process of accurately locating and identifying underground utilities to help support the design and construction, their firm has an excellent track record and substantial experience. George F. Young, Inc. has a dedicated team that is focused on locating phone lines, gas mains, water mains, fiber optics, and other utilities.

RESUMES

Jonathan H. Cole, P.E.

POSITION:
President/Principal-In-Charge

EDUCATION:
University of Connecticut
Storrs, CT
B.S., Civil Engineering (1979)

YEARS OF EXPERIENCE: 39

LICENSURE/CERTIFICATIONS:
- P.E. #36384, Florida
- P.E. #0013198, Connecticut
- P.E. #06872, New Hampshire
- P.E. #E-17024, Nebraska
- P.E. #27320, Kansas
- FL Advanced Traffic Control
- FDEP Stormwater Erosion and Sediment Inspector

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Mr. Cole is a Professional Engineer registered in the States of Florida, Connecticut, New Hampshire, Nebraska and Kansas. He is President of Giffels-Webster Engineers, Inc., a Florida corporation and was formerly the County Engineer of Charlotte County, FL.

He has 39 years of experience in various types of civil engineering and construction projects, 30 of which were conducted in the Charlotte/Sarasota County area. He offers specialized knowledge, experience and proven ability in:

- Contract administration & construction services
- Entire utility infrastructure design/FDOT utility JPA plans for utility replacement/relocation in conjunction with major road widening projects
- Engineering design/permitting of water distribution systems; sewer collection, transmission, treatment; reclaimed water distribution systems; and package plants for private and municipal projects
- Expert Witness testimony for private or municipal civil, utility system, and construction projects
- Sub-surface utility locates using ground penetrating radar

Mr. Cole has also been the Principal-in-Charge/Engineer for over two dozen large utility projects in highly developed areas for Charlotte County Utilities, the East/West Spring Lake Wastewater Expansion Project; Englewood Water District, Sewer Collection System; Sarasota County's Phillippi Creek Septic System Replacement Program and the Martin County Sewer Expansion Program.

Mr. Cole is also certified by AIRVAC/Aqseptence, Inc., to design vacuum sewer systems. A few of these projects are listed below:

Englewood Water District:
- Nine Large Sewer Collection System areas (V-1 through V-9) and water distribution projects

City of Punta Gorda:
- Burnt Store Road Phase I Utility Relocation
- Piper Road Improvements – including 16" pressure mains

Sarasota County:
- Phillippi Creek Septic System Replacement Program, Area E; Area F; Area C; Area K, East & West; Area N, Phases I & II; Area M-West; Area I & J; Area O & P
- Phillippi Creek Septic System Replacement Program, Area N-3

Martin County Utilities:
- Seagate Harbor/Lighthouse Point Sewer Expansion area
- North River Shores, Phase 1 and 2 Sewer Expansion area

Ron DeSantis, Governor

Melanie S. Griffin,Secretary

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COLE, JONATHAN H

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EXPIRATION DATE: FEBRUARY 28, 2025

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Dennis J. Croyle, P.E.

POSITION:
Project Engineer

EDUCATION:
University of Florida
Gainesville, FL
B.S., Civil Engineering (2011)

YEARS OF EXPERIENCE: 12

LICENSURE/CERTIFICATIONS:
- P.E. #82287, Florida
- FL Advanced Traffic Control
- FDEP Stormwater Erosion and Sediment Inspector

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Mr. Dennis J. Croyle is a Professional Engineer registered in the State of Florida. Mr. Croyle worked in the construction industry where he gained valuable knowledge through work experience in civil construction. He earned a Bachelor's of Science in Civil Engineering (2011) from the University of Florida. Mr. Croyle has been a Project Manager for GWE since early 2014 specializing in the planning, design and construction of utility infrastructure projects throughout the State of Florida.

As a Project Engineer, Dennis Croyle manages and designs water and wastewater projects, including but not limited to wastewater collection and water supply. Mr. Croyle has over 10 years of engineering and project management experience encompassing hydraulics, water and wastewater facilities, design, permitting, and construction services.

Sarasota County:
- Hillview (Shamrock Boulevard) Force Main Extension
- Midnight Pass Water Main Replacement
- Phillippi Creek Septic System Replacement Program: Area I & J; Area N-3; Area O & P; Area M-West

Charlotte County Utilities:
- Wastewater Expansion Vacuum Sewer, Phase 2
- Myakka Booster and El Jobean Vacuum Pump Station
- East/West Spring Lake Vacuum Sewer Expansion Program
- Utility Adjustment/Relocation Design, Midway Boulevard Widening, Phase 2

Englewood Water District:
- V9-B & V9-C Vacuum Sewer Design

Martin County Utilities:
- North River Shores, Phase 2: Vacuum Sewer Collection System
- Golden Gate: Vacuum Sewer Collection System
- Old Palm City: Vacuum Sewer Collection System

City of Port St. Lucie:
- Southport Unit 5: Vacuum Sewer Collection System

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Melanie S. Griffin,Secretary

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CROYLE, DENNIS JAY

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Kendra Kotlarski, EI

POSITION:

Engineer Intern

EDUCATION:

Florida Gulf Coast University
Fort Myers, FL
B.S., Civil and Environmental Engineering (2020)

YEARS OF EXPERIENCE: 2

LICENSURE/CERTIFICATIONS:

- EI #1100024578

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Ms. Kendra Kotlarski is a graduate from Florida Gulf Coast University in Fort Myers, Florida. She earned a Bachelor's of Science in Civil and Environmental Engineering.

She has her Engineer Intern (EI) certification in Florida and is on the path to becoming a Professional Engineer. While in school, Kendra worked in the utilities industry and brings a knowledge of utilities, hydraulics, water resources, permitting, and computer and design skills to the Giffels-Webster Engineers team.

As an Engineer Intern at GWE, Kendra has made significant contributions to several utility projects and primarily assists with the planning and design aspects of sewer projects throughout Florida.

Some of the most notable projects she has worked on include:

Hillsborough County:
- Ruskin and Wimauma Septic to Sewer Conversion Program

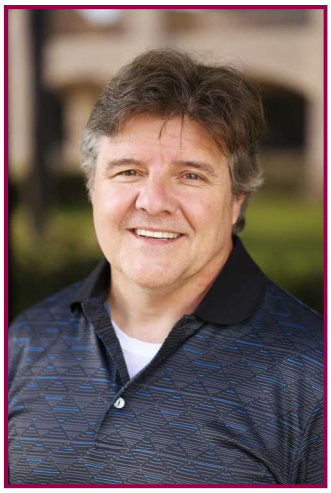
City of Venice:
- Bay Indies Utility Relocations Phases 1 and 2

City of Punta Gorda:
- Charlotte Park Septic to Sewer Project

Charlotte County Utilities:
- Ackerman-Countryman Phase 2
- Lake View/Midway Water Quality Improvements

Martin County Utilities:
- Port Salerno New Monrovia Vacuum Sewer Design
- Rocky Point Vacuum Sewer Design

Andrew J. Wickerson, P.E.



POSITION:
Professional Engineer

EDUCATION:
Oregon State University
Corvallis, OR
M.S., Civil Engineering (1997)

United States Naval Academy
B.S., Computer Science (1987)

YEARS OF EXPERIENCE: 37

LICENSURE/CERTIFICATIONS:
- P.E. #58397, Florida
- FL Advanced Traffic Control
- FDEP Stormwater Erosion and Sediment Inspector

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Mr. Andrew J. Wickerson is a Professional Engineer registered in the State of Florida. He has been employed in Engineering & Project Management with GWE since 2005.

Andy began his career in the U.S. Navy, gaining valuable and extensive experience planning and budgeting, design and execution of facility maintenance and construction projects valued in excess of $100 million. During his 12 years of service as a Military Civil Engineer, he was directly responsible for oversight and management of all aspects of facility construction, maintenance, and environmental compliance programs; the review of construction contract plans, specifications and submittals; managed construction quality assurance and approved payment and acceptance of facility construction work. He directly supervised staff engineers, construction inspectors and administrative personnel.

In his capacity of Senior Design Engineer at GWE going on 14 years, he provides hands-on technical support, responsible for a full range of land development, site planning and civil engineering tasks associated with design, permitting and execution of commercial, residential and public construction projects. He works directly under principal engineers, as well as interacting directly with surveyor, draftsmen and technician staffs.

His past experience also afforded him the opportunity to interact directly with clients, local governmental staff and permitting authorities. Andy is experienced in interpreting and implementing zoning codes, development legislation and technical design requirements on a daily basis, utilizing a variety of engineering design, spreadsheet, scheduling, AutoCAD and presentation tools.

Charlotte County Government:
- Midway Boulevard Phase 1 & 2 Roadway Widening
- Midway Boulevard Phase 1 & 2 Water/Sewer and Reclaim Design (3 miles)
- Placida Road Recreational Trails & Intersection Improvements
- Placida Road Water/Sewer and Reclaim Design (8 miles)
- Olean Boulevard Roadway Widening
- Olean Boulevard Water/Sewer and Reclaim Design (0.6 miles)

Sarasota County Government:
- County Sewer Replacement Program Projects – Vacuum Station Site Planning/Permits
- Snook Haven Park – Water Distribution and Sewer Collection Design/System Upgrades

City of Palmetto:
- Ward 1 Community Block Grant Neighborhood Improvements
- Ward 1 Roadway, Water/Sewer and Reclaim Design (3 miles)

Ron DeSantis, Governor

Melanie S. Griffin,Secretary

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Kevin E. Furniss

POSITION:
Senior Designer

YEARS OF EXPERIENCE: 34

LICENSURE/CERTIFICATIONS:
- Certified Technician Level III

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Mr. Furniss has been with Giffels-Webster Engineers, Inc. (GWE) since 1989. He is a 1986 graduate from Lemon Bay High School in Englewood with years of drafting experience, including mechanical and architectural drawings. His background education includes various computer courses, blueprint reading and architectural drawings through Manatee Community College (State College of Florida) and Charlotte Vocational-Technical School.

Mr. Furniss has held the position of senior designer and AutoCAD® Technician with GWE. His background, training and experience include AutoCAD® drafting, engineering project designs, and assisting in the capacity of construction inspector.

He is directly responsible for the accuracy and deliverables of the record/as-built drawings for virtually all of GWE construction projects, and in particular, Sarasota County and Englewood Water District Expansion Projects. Below are some of the projects he has worked on.

Charlotte County:
- Burnt Store Road Improvements, Army Corp of Engineers Permitting Assistance
- Midway Boulevard, Phase II-Roadway Design and Drainage Project, Port Charlotte
- East/West Spring Lake Wastewater Expansion Project, Port Charlotte

Sarasota County:
- Phillippi Creek Septic System Replacement Program, Vacuum Sewers: Area A; Area C; Area D; Area E, Area F; Area K, East and West; Area N-Phases I & II; Area O & P
- Center Road Utility Relocation, as-built drawings, Venice
- U.S. 41 & Pump Station 25, including both 16” and 18” Force Mains

City of Punta Gorda:
- Burnt Store Road Utility Improvements, Phase I
- Piper Road Improvements – including 16” pressure mains

Englewood Water District:
- All EWD Vacuum Sewer projects
- EWD/FDOT JPA Water Main Relocation Projects along S.R. 776, Sarasota/Charlotte Counties
- EWD Force Main Interconnect, Sarasota County
- Manasota Key Sanitary Sewer Collection Systems, Charlotte County
- Lemon Bay Reuse Force Main, Charlotte County
- Winchester Boulevard Force Mains, Charlotte County
- EWD’s On-Going Phased Vacuum Sewer Expansion Project

City of Venice:
- Center Rd. Roadway Plans & ICPR’s

Christopher V. Orren

POSITION:
Utility Designer/Draftsperson

EDUCATION:
Florida Institute of Technology
B.S., Space Sciences (1985)

YEARS OF EXPERIENCE: 38

LICENSURE/CERTIFICATIONS:
- Certified Technician Level III

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Mr. Orren has over 27 years of experience as a Designer/Draftsman. He also has an additional 8 years experience as a Senior Engineer in the field of Mechanical Analysis Ordnance Engineering for Martin Marietta in Orlando.

He received a Bachelor of Science in Space Sciences and a minor in Physics at the Florida Institute of Technology in 1985. He joined Giffels-Webster Engineers in 2001 and is proficient in AutoCAD®, Civil 3D, ESRI ArcGIS, Civil Surveying & Aerial Imaging Programs, EPIC-2D/3D, and HULL Finite Element Analysis (FEA).

Mr. Orren is a certified Technician Level III as both a Chief Computer Operator and a Chief Drafter by the National Society of Professional Surveyors and the American Congress on Surveying and Mapping (NSPS-ACSM). Since joining Giffels-Webster Engineers, Mr. Orren has been involved in field survey and data collection, drafting, and design including Utility Projects, Maintenance of Traffic (MOT) and Best Management Practices (BMP) of numerous public and private sector projects, including:

Charlotte County:
- Burnt Store Road Improvements, Army Corp of Engineers Permitting Assistance
- Veterans Boulevard Phases II & III, Port Charlotte
- Fire Station No. 13, San Casa Boulevard, Englewood
- WO #22-Design/Drainage/Paving at Various Location (Tringali Park, Englewood Annex, Mid-Century Library, Punta Gorda Library and Harold Avenue Park)
- WO #61-Design/Permitting of Water Control Structure crossing in the Pompano Waterways at Elkcam and Fordham Boulevard at U.S. 41 (micro-tunnels), Port Charlotte
- Midway Boulevard, Phase II-Roadway Design and Drainage Project, Port Charlotte
- Placida Road Utility Improvements, Cape Haze
- East/West Spring Lake Wastewater Expansion Project, Port Charlotte

Sarasota County:
- Brookhaven Force Main Design, Sarasota

City of Punta Gorda:
- Bal Harbor Boulevard, 16" Water Main Design

Englewood Water District:
- Area V9-B & C Vacuum Sewer Expansion Project, including preparation of sketches for utility easements
- Reclamation Facility Odor Control Master Plan Project, Englewood
- Winchester Boulevard South, Utilities Relocation Project, Englewood

City of Venice:
- Center Road Roadway Plans & ICPR's

SUB-CONSULTANTS RESUMES

MERIDIAN GROUP OF SOUTH FLORIDA, INC.

JOSEPH E. TROTT, PSM

Mr. Trott has been the President of Meridian Group since its founding in 1990. During his career, he has performed surveying services for both private and public clients. These services included control surveys, boundary and topographic surveys, right-of-way surveys, hydrographic surveys, mean high water surveys, location of jurisdictional lines, route surveys, construction stake out and as-built surveys. In addition, Mr. Trott has prepared legal descriptions, sketches, right-of-way mapping and plats for various projects.

Title:
Owner, President

Project Role:
Project Surveyor

Registrations/ Certifications:
Professional Surveyor and Mapper, Florida, No. LS5153

Professional Affiliations:
American Congress on Surveying and Mapping
National Society Professional Surveyors

Office:
Port Charlotte, Florida

Years of Experience:
Forty-five (45)

Years with Meridian Group:
Thirty-three (33)

REFERENCE PROJECTS - Construction Surveying

- South Service Area East Naples Wastewater Collection Facilities
- Wal-Mart at Punta Gorda
- Sam's Club at Port Charlotte
- Sam's Club at Sarasota
- City of Punta Gorda Water Distribution and Sewer Replacement
- Hillsborough Extension-Charlotte County
- Veterans Boulevard-Charlotte County
- IMPAC University
- State Road 776
- Cracker Barrel at Port Charlotte
- Marathon Ashland Petroleum sites throughout Florida
- Bonita Beach Road
- Publix at Englewood, Port Charlotte, and Punta Gorda
- Palm Automotive Auto Mall
- Charlotte County Homeless Coalition
- Charlotte County Hearing Impaired
- Cape Coral Utility Expansion – Numerous Contract Areas since 2000
- Pioneer Trail Bike Path
- Various Charlotte County Development Authority Sites
- Rotonda Sands/Meadows and Villas/Springs Water & Sewer
- Woodmere Creek Basin
- Water & Wastewater System Improvements DeSoto County US 17
- Winchester Reuse
- Beach Road Sidewalk Improvements and Roundabout
- Border Road-Sarasota County
- Various Sidewalk and Box Culvert Projects – Charlotte County
- Labelle Wastewater Collection System
- Sunnybrook North Access Rd. Force Main Replacement
- USACE Septic to Sewer System City of Clewiston
- East West Spring Lake Contract B Vacuum System
- El Jobean Vacuum Sewer System
- Placida Road Sidewalk and Utilities
- Charlotte County Ackerman Vacuum Sewer
- Tuckers Offsite Utilities-Charlotte County
- Cape Haze Dr. CCU Rec Water And FM
- Page Park Water Main Improvements PH 2
- Pine Ridge Road Sewer Replacement
- Palm Springs Water District
- Numerous other construction projects including Federal and State Highways and Utilities

Education
BS in Electrical Engineering, 1993
Florida Atlantic University

FL Registration:
PE No. 60755

Professional Associations:
Florida Engineering Society (FES)
Florida Institute of Consulting Engineers (FICE)

Michael A. Guida, P.E.

C&W Engineering, Inc. - President/Electrical Engineer

Professional Employment History

Michael has over 28 years of proven experience in commercial, industrial, health care, educational, residential and photovoltaic designs for construction. His experience includes electrical engineering design and project management of various municipal, commercial, industrial, educational and health care facilities. He has project managed and coordinated/designed projects with Electrical, HVAC, Plumbing and Fire Protection systems through to completed construction. He has a firm knowledge of FFPC, NFPA codes, Florida Building Code and of course NEC.

Representative Projects

Palm Beach County Lift Station Rehabilitation Project B, Bid Pkg. 2
Work Included new service wires, conduit, main service, control panel; sizing for pumps and voltages.

Okeechobee Deep Well Injection System
Designed two new deep injection wells including power and control systems monitored remotely through SCADA.

Okeechobee Utility Authority Water Treatment Plant – High Service and other Plant improvements
The work included filter effluent transfer pump rehabilitation and provided server improvements to the ground storage tank, a new sludge thickener, including new high service pump station, modifications to the existing electrical system and a new main breaker.

Martin County Golden Gate Vacuum Sewer Pump Station
The project included conversion of septic to vacuum sewer including a new pump station building with VFD equipment, generator, ATS switch, building lighting and miscellaneous field instruments.

West Palm Beach ECR Water Reclamation Facility
The project included GBT building, HVAC evaluation and design, electrical and HVAC load calculations, design.

Palm Beach A-7 Pump Station
Upsizing of pumps to 12HP, reuse the power service, reuse and modify control panel, wet well level control system, RTU points.

Palm Beach E-3 and G-9 Sanitary Pump Station Improvements
The work included Electrical Engineering and design of new control panels, conduits, service conductors, main breakers. New RTU system, as needed. New remote telemetry system.

Pembroke Pines WWTP Rehabilitation, Phase 1
The project included Electrical Engineering and design of new control panels, conduits, service conductors, main breakers. RTU system, as needed and new remote telemetry system.

C&W Engineering, Inc.
6903 Vista Parkway North, Suite 10
West Palm Beach, FL 33411
561-642-5333

UNIVERSAL ENGINEERING SCIENCES

Education

BS, Civil Engineering, Florida Gulf Coast University

Years of Experience

8

Licenses & Certifications

- Professional Engineer, FL#85319
- ACI Concrete Construction Specialty Inspector
- ACI Concrete Field Testing Technician – Level 1
- OSHA 10hr

Adam J. Dornacker, PE

Geotechnical Department Manager/Professional Engineer

Mr. Adam Dornacker, PE, has over eight years of experience in his field. His expertise includes foundation design analysis and recommendations, foundation installation monitoring, field and laboratory testing of soil and concrete. Mr. Dornacker is responsible for managing and coordinating all work performed by the Geotechnical Department. His responsibilities include preparing and reviewing geotechnical and materials engineering inspection reports, coordinating and supervising engineering staff and drilling personnel, and conducting foundation observations, foundation design reviews, and geotechnical instrumentation monitoring, and reviewing and signing materials testing reports.

PROJECT EXPERIENCE

US 41 Utility Replacement Project, Fort Myers, FL

Fort Myers, FL

The intent of this project is to relocate City of Fort Myers utilities along US 41 between Winkler Avenue and Victoria Avenue in association with FDOT's roadway improvement project for the US 41 corridor. GFA performed a Geotechnical Exploration consisting of soil survey borings along US 41 for the proposed jack and bore locations and along the proposed directional drill areas, and 25 cores of the existing asphalt for each of the outside lanes of US 41 where the proposed replacement utilities are located. Mr. Dornacker was the project manager for the geotechnical operations and is also the geotechnical engineer of record for the foundation recommendations.

Sanibel Island Causeway, Sanibel, FL

Sanibel, FL

This project consisted of stormwater facility improvements along the Sanibel Island Causeway in Sanibel, Florida. GFA performed a Geotechnical Exploration consisting of nine standard penetration test borings to depths of 30-feet below grade, five double ring infiltrometer tests, and four permeability tests on samples collected during field operations. Mr. Dornacker was the project manager for the geotechnical operations .

Golden Gate Parkway Bridge over Santa Barbra Canal , Naples, FL

Naples, FL

This project consists of the phased demolition of the existing bridge along Golden Gate Parkway and the new construction of a four-lane two-way bridge over the Santa Barbra Canal. Mr. Dornacker was responsible for coordinating completion of the geotechnical borings to depts of 100 feet below ground surface, including coordination of GPR survey and MOT operations. Mr. Dornacker was also responsible for the review of the geotechnical findings and generating the report recommendations to include foundation piling recommendations in accordance with FDOT standards.

Caloosahatchee Connect

Fort Myers to Cape Coral, FL

This project will serve to connect a reclaimed water transmission pipeline from the City of Fort Myers to the City of Cape Coral just South of the Midpoint Bridge. The transmission pipeline will be installed underneath the Caloosahatchee River using large-scale directional drilling operations, Mr. Dornacker was the lead Geotechnical engineer for the project and was responsible for the coordination of drilling operations, review of soil samples, review of laboratory testing (including direct shear and consolidation testing), and generation of geotechnical report and recommendations. Geotechnical borings were completed in the Caloosahatchee River using a truck-mounted drilling rig atop a push barge with specially designed platforms, borings were performed to depths exceeding 120 feet below sea level.

Jennifer Krajcir

Ecologist

Contact

24123 Peachland Blvd C4-242
Port Charlotte, FL 33954
941.303.3745
SuncoastEco@gmail.com

Primary responsibilities include surveying and monitoring state and federally listed species including general and species-specific surveys, development/design of project specific surveys and standard operating procedures, data analysis and providing guidance on conservation measures and regulatory requirements of protected species. Extensive experience in permitting and regulatory compliance.

Education/Training

BS Biology, University of Tennessee
Knoxville, TN (2000)

Authorized Gopher Tortoise Agent,
FFWCC (GTA-17-00062D)

ACE Wetland Delineation Training
with Regional DEP Supplement
Tampa, FL (2018)

Florida Master Naturalist
Coastal/Upland/Wetland
Sarasota & Charlotte Counties
(2018-2019)

Florida Scrub Jay
(2019)

Relevant Projects & Experience

Bald eagle: Monitoring bald eagle nests during nearby construction projects for nests (roofing, residential construction, commercial construction). Preparation of Bald Eagle Management Plans and reporting to USFWS, FWC, and local governments.

Florida scrub jay surveys in accordance with U.S. Fish and Wildlife Service (USFWS) Scrub Jay Survey Protocol within Charlotte and Sarasota counties.

Gopher tortoise surveys and relocations: 750+ hours gopher tortoise surveys, 500+ gopher tortoise burrow excavations by hand shovel, backhoe/excavator, and bucket trapping

.

Burrowing Owl surveys to locate burrows, hand clear vegetation, provide t-perches, install stakes and signage to protect burrows/owls. Charlotte County (Placida). Permitting and relocation when required.

Wetlands: Identification, delineation, DEP and ACE permitting, as well as restoration monitoring / reporting.

Professional Affiliations

Ecological Society of America
Gopher Tortoise Council
Society of Wetland Scientists

Other Notables

PMP Project Management certification

Electronics Technician (ET), US Navy

Professional Licensed Drone Pilot

ARCHAEOLOGICAL CONSULTANTS INC.

Florida's First Choice in Cultural Resource Management

MARION M. ALMY, RPA

Project Manager

Ms. Almy, the founding Principal and President of Archaeological Consultants, Inc. (ACI), has 45 years of cultural resource management experience throughout Florida. She manages projects for a diversity of public and private entities including the Florida Department of Transportation, Florida's Turnpike Enterprise, the USDA Forest Service, South Florida, Southwest Florida and Suwannee River Water Management Districts, and various counties, as well as large-scale projects for private corporations. She represents clients in meetings with regulatory agencies, including the Florida State Preservation Office, US Army Corps of Engineering, the US Coast Guard, Federal Bureau of Prisons, the National Park Service, and federally recognized Native American tribes.

Professional Credentials

Meets the Secretary of Interior's Professional Qualifications Standards

Registered Professional Archaeologist (RPA)

B.A. Anthropology, Florida State University, 1968

M.A. Anthropology/Public Archaeology, University of South Florida, 1976

Florida Archaeological Council (past President)

National Trust for Historic Preservation (Board of Advisors)

American Cultural Resource Association (past Director)

Relevant Professional Training

Revised Section 106 Workshop

Advanced Seminar on Preparing Agreement Documents

Section 4(f) Compliance for Transportation Projects

Native American Graves Protection and Repatriation Act

Bridge Rehabilitation for the 21st Century: Sponsored by FHWA and The Historic Bridge Foundation

- Project Manager and Principal Investigator for a diversity of undertakings on behalf of all FDOT districts, Florida's Turnpike Enterprise, and the Central Environmental Management Office (CEMO). Project types include PD&E studies and re-evaluations; pond siting surveys; right-of-way transfers; bridge replacements; effects determinations and Section 106 Case Study Reports; Memoranda of Agreement (MOA); Data Recovery Plans for Phase II and Phase III excavations, Historic American Building Survey/Historic American Engineering Record (HABS/HAER) documentation; and mitigative excavations.
- Expertise in planning and participation in public workshops, coordinating with local, state, and national preservation groups and regulatory agencies.
- Consultant to the Florida Division of Historical Resources (DHR) to develop the original and revised *Standards and Guidelines for Archaeological and Historical Reports* (FAC 1A-46), and ACI's Project Manager for the DHR *Cultural Resource Management Standards & Operational Manual*.
- More than three decades of experience creating and implementing cultural resource components for historic preservation interpretive plans for parks, historic sites, trails, and byways, including Historic Spanish Point, the antebellum Gamble Plantation, the Lake Okeechobee Scenic Master Trail Plan, county parks, and interpretive plans for the Pensacola Scenic Highway and the Tamiami Trail as part of Florida's Scenic Highway Program.
- Recognized leader in historic preservation: Governor's appointed prehistoric archaeologist to the Florida National Register Review Board and chairman to the Florida Historical Commission; Florida Advisor to the National Trust for Historic Preservation and member of the Executive Committee; contributor to the Journal of the Florida Engineering Society.

YVONNE R. HALL, ASLA

Landscape Architect

Yvonne R. Hall is a graduate of The Pennsylvania State University with a Bachelor of Science in Landscape Architecture. She is a Registered Landscape Architect in the State of Florida, registration number LA0001573. Ms Hall has 40 years experience in Landscape Architecture and Landscape Design in the West Florida Region. This includes municipalities from Marco Island, Collier, Lee, Charlotte, Sarasota, Manatee, Hillsborough, Pinellas and Hardee, Miami-Dade Counties, City of Sarasota, City of Bradenton, City of North Port, City of Fort Myers and Village of Estero. Her project management experience includes construction supervision and interdisciplinary coordination. Ms Hall has a thorough knowledge of and focuses her design concepts on the use of indigenous and naturalized materials with special concern for the environmental impact of design choices throughout the life of a project not limited to drought and site survivability, integration with the existing materials and aesthetics, and consideration of the intensity of maintenance. She is expert in site analysis and in developing appropriate solutions considering all the various disciplines involved in the specific project. Projects include:

- Snook Haven Addition
  Sarasota County Parks

- Stoneybrook at Heritage Harbor
  Entry Medians

- Vacuum Station Ackerman Ave
  Charlotte County Utilities

- Vacuum Station Harbor Drive
  Charlotte County Utilities

- Gaines Park
  Charlotte County

Florida License LA 0001573 2256 Grove Street Sarasota FL 34239 PH 941-952-9123 FAX 941-954-7483

SECTION II:
PROPOSED MANAGEMENT PLAN

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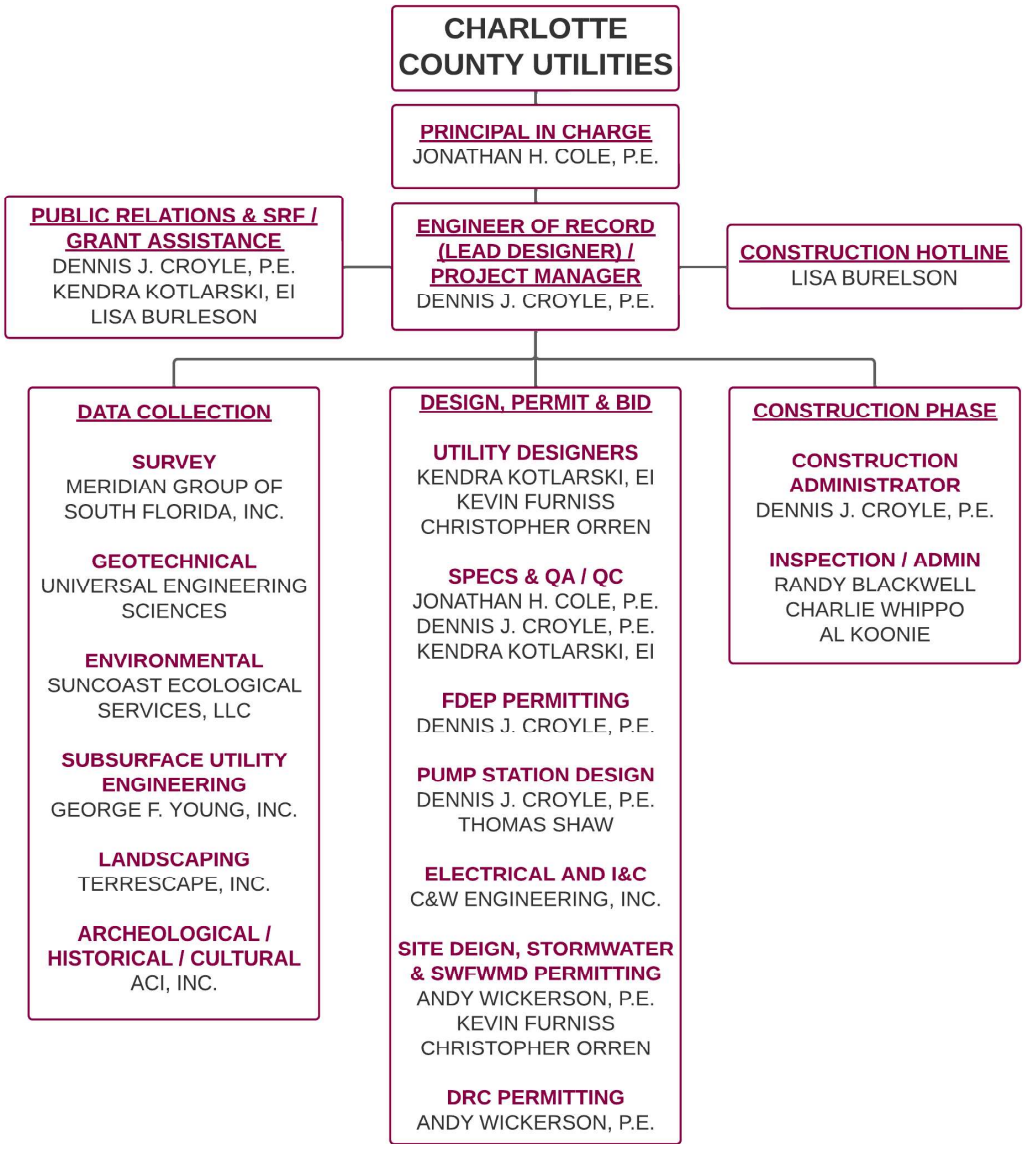
A. Team Organization

The Giffels-Webster Engineers, Inc. (GWE) team is led by veteran principals overseeing and monitoring the design and construction throughout the entire process, providing Charlotte County with the continuity and experience necessary for a successful project.

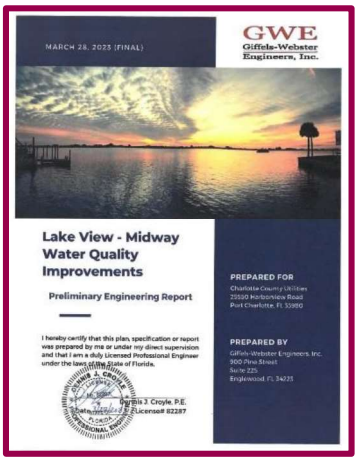
Our team is composed of local, knowledgeable experts in an efficient organization for the preliminary engineering, vendor qualification, design, and construction phases. Dennis Croyle will remain the Project Manager throughout this project. The Organizational Chart below describes the leadership and management that will be offered to Charlotte County Utilities for the phases of the project.



1. Preliminary Engineering Phase

The preliminary engineering phase outlines the constraints as well as the opportunities to achieve the best result. This phase will focus on several key design elements including analysis of alternative sewer options for specific areas, potable water main replacement, pump station site evaluation, critical crossings, and zoning issues. Other critical aspects such as environmental, protected species, rock, and archaeological issues will be investigated.

If mistakes are made in this early phase, they will magnify and ripple throughout the design and construction. Therefore, it's important to have the most seasoned engineers who understand what is important, and what is not to lead this phase.



This phase will be managed by Mr. Cole, who has decades of experience with vacuum design as well as master planning experience using vacuum, low pressure, and gravity sewer. We will provide research, background data, preliminary hydraulics, and design concepts for evaluation and incorporation into the preliminary engineering report (PER).

Our management plan ensures that the PER will satisfy the requirements for FDEP SRF and grant funding outlining all critical issues and making recommendations for CCU review, input, and final approval guiding the subsequent design phase.

2. Vendor Qualification Process

For gravity and LPS systems, vendor qualification is not critical. However, if the decision is made to install a vacuum system in this area, then the vendor qualification process is an important step. The purpose of this phase is to develop an RFQ to pre-select a vacuum equipment vendor to use as a basis of design for the project. The goal is twofold: First, develop a standard to qualify vendors in a comprehensive way. This includes a structured and practical evaluation process of determining whether a vendor can fulfill the specified requirements that will satisfy the project needs. Second, select a vendor that the engineer and the utility can work with throughout the entire design and construction process so that the vendor is known upfront before the design even begins.

This task will be managed by Mr. Dennis Croyle, P.E., who not only has worked on vendor selection processes but is also most knowledgeable with the latest vacuum manufactured material and specifications.

3. Design Phase

The goal of the project is fundamentally for the installation of a new sewer collection system; however, it also includes the replacement of existing water mains, potential reclaimed water mains, and some storm drainage improvements.

Dennis Croyle will manage the entire project as the "Engineer-of-Record" (lead designer) for the primary elements including the pump station and collection system. Jonathan Cole, Dennis Croyle, Kendra Kotlarski, Kevin Furniss, and Chris Orren will collectively develop the design plans. Dennis and Kendra will coordinate the plans and specifications and will provide hydraulic QA/QC Services. This same design management team has worked together on your past septic to sewer projects and understands what works, what doesn't work, and where the pitfalls are before it becomes a problem.

In addition to project management services including management plans, kickoff and progress meetings, and status updates, this management plan of the design phase will focus on several critical elements, including team coordination and the key design components. For operational consistency, we anticipate managing and providing similar design elements as past projects performed for CCU.

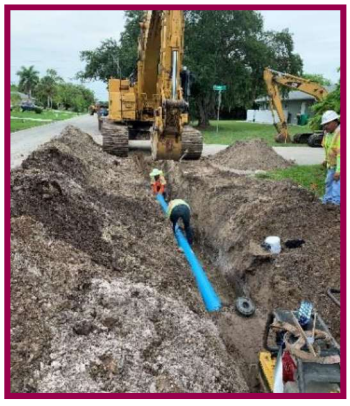
Throughout plan development, reviews will be held with staff so that there is concurrence during the design. Sometimes during design, new information is revealed so the team must be flexible and adapt for better outcomes throughout the entire process.

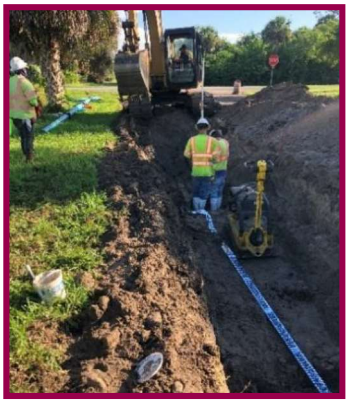
4. <u>Construction Phase</u>

Regardless of the quality of the plans, there is no question that some unforeseen challenges will arise during construction for any large project. Typically, CCU provides the daily inspection of the project. However, as the EOR, Dennis acts as a liaison and provides approvals and key correspondence during construction resolving field issues that tend to come up where we need to verify hydraulics due to field changes from unforeseen conflicts.

Our management during construction includes having the staff necessary to continue with CEI assistance for CCU, including shop drawing review, inspection of the vacuum station, correspondence necessary for hurricane tie-downs, field assistance, training classes, and start-up assistance.

In addition to managing the contractor, monthly progress meetings are held; meeting minutes are issued; pay requests are processed; field conflicts are resolved; and probably the largest issue, residents' questions, and complaints are resolved. GWE maintains a construction hotline phone system managed by Mrs. Lisa Burleson who logs all calls and forwards them to the appropriate party for resolution.





<u>THE END RESULT FOR CHARLOTTE COUNTY UTILITIES</u>

Septic to sewer projects of this magnitude are complex and at times awkward. Answers will be required when residents ask detailed questions about sewers, perhaps about noise and odors and past experiences that other firms, who do not have the understanding, may not be able to properly answer.

When it comes to difficult *septic to sewer* projects, GWE has "been there and done that"; and we have the answers, making the tough calls, and getting the job done right, at a cost that residents can afford, which is ultimately the bottom line for the residents of Cape Haze.

SECTION III:

PREVIOUS EXPERIENCE OF TEAM PROPOSED FOR THIS PROJECT

SECTION III: PREVIOUS EXPERIENCE OF TEAM PROPOSED FOR THIS PROJECT

A. Describe Projects – In particular, septic to sewer, vendor qualification process, and vacuum sewer systems, gravity sewer systems and/or low-pressure sewer systems

Septic to Sewer Projects

Giffels-Webster Engineers, Inc. (GWE) has been one of the pioneers in the design, permitting and construction management (CEI) of septic to sewer projects in Florida, and certainly the pioneer for vacuum sewers in Charlotte and Sarasota County. GWE began designing vacuum sewers for the Englewood Water District (EWD) in the mid-1990's.

Moreover, the key staff members have been employed at GWE for many years providing stability and experience, forming the core of our vacuum design team.

GWE has been the vacuum Engineer-of-Record (EOR) for the Englewood Water District for over 20 years. The Englewood system is one of the largest vacuum septic to sewer programs as well as the first vacuum septic to sewer projects built in Charlotte County.

Additionally, GWE provided vacuum services for Sarasota County for the Phillippi Creek Septic System Replacement Program (PCSSRP) including Area's "D", "E", "F", "K-East", "K-West", Area "N"-Phases I & II, Area "O & P" and Area "M-West", all of which were septic to sewer vacuum projects. This massive project is considered one of the most complex vacuum septic to sewer systems built to date. This phased sewer expansion program also received SRF loan funding and GWE provided engineering backup documentation and assistance.

GWE provided septic to sewer vacuum design and CEI services for the Martin County Wastewater Sewer Expansion / Septic Elimination Program for the "Seagate Harbor/Lighthouse Point" system, "North River Shores" Phase 1 and 2 systems, and Golden Gate all of which are operational. Old Palm City and Port Salerno have been designed and Rocky Point is under design.

Finally, GWE designed the Charlotte County East/West Spring Lake (A, B, C & D) as well as El Jobean septic to sewer projects, both of which are operational. We are also the EOR for the Ackerman/Countryman project currently under construction as well as the vacuum station for El Jobean, all of which are septic to sewer projects. Currently, we are anticipating the start of the construction phase of zones 3, and 4, and the low pressure sewer zone in the summer of 2023.

So far, GWE has designed 30 vacuum stations serving more than 34,000 connections, over 2 million feet of vacuum main, and 14,000 valve pits to date. Moreover, GWE developed the dedicated air intake concept to eliminate the unsightly "candy canes" in front yards used at one time. GWE was one of the first to implement the use of mulch beds for odor control at vacuum stations rather than chemicals sprayed in the collection tank that was used in the 1990s. No other firm has come close to the number of systems, or depth of vacuum sewer system "septic to sewer" experience in Florida than Giffels-Webster Engineers, Inc.

Vendor Qualification Process

We have experience in developing RFQs and facilitating preselection processes to meet CCU's Approved Products List requirements. We are knowledgeable about vacuum systems and can coordinate with the Purchasing Department throughout the selection process.

GWE has experience in vendor qualification processes for vacuum sewer systems, including system design, equipment supply, training, quality assurance, permitting support, construction representation, operation and maintenance training, warranty, and ongoing support. GWE was involved with the vendor qualification process for Sarasota County and assisted CCU with evaluating alternate vacuum vendors for the Lake View/Midway project which is still ongoing. In addition, we developed a qualification process to shortlist vacuum contractors for Martin County's septic to sewer program.

For CCU, selecting a vendor for vacuum sewer systems involves more than just finding a company whose valves or valve pits work. The vendor should also have the capacity to fully support their products and provide design support throughout the entire process, including AutoCAD drawings, electrical design support, SCADA inputs, monitoring options, and staffing for support services during and after construction.

It is best for CCU to have one vendor for the entire collection system to avoid warranty issues and finger-pointing in case of operational problems. With multiple vendors, disagreements may arise during emergencies, and stocking spare parts becomes a concern. GWE has experience with selecting vacuum manufacturers for other sewer expansion projects and suggests tailoring the RFQ based on successful structures used by other utilities.

"While some firms take a passive role in the design process, GWE has taken a more active role by learning the finer points of vacuum design. Having been a part of the evolution of this technology over the past 20+ years, the knowledge of "what not to do with vacuum" may be one of GWE's most valuable commodities from a technical standpoint." **- Rich Naret, P.E.**

East/West Spring Lake Contract A Vacuum Station

East/West Spring Lake Contract D Vacuum Station

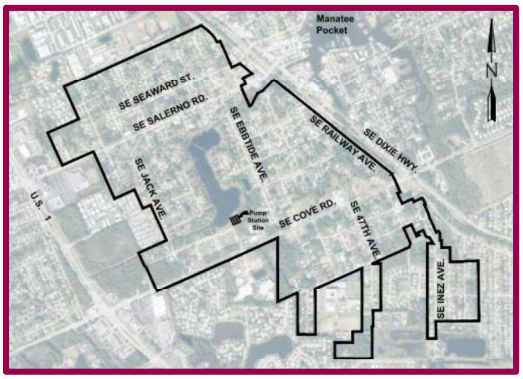
Ackerman Vacuum Station (Under Construction)

El Jobean Vacuum Station

The following pages provide summary sheets of our septic to sewer and other local utility projects.

Port Salerno/New Monrovia Vacuum Sewer Design, Martin County, Florida

Project Description/Nature of Work:
The Port Salerno/New Monrivia septic to sewer project involves the design and construction of a centralized vacuum collection sewer system into a highly developed neighborhood with commerical and residentialproperties located in Stuart, Florida.



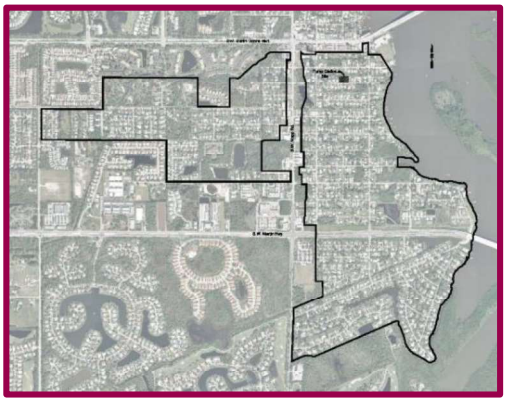
This project consists of approximately 107,810 feet (20.4 miles) of vacuum pipe, approximately 427 valve pits, a vacuum pump station, and force main serving approximately 1,015 ERC's.

Year Completed: Design Complete December 2022
Cost: $23M (bid)
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E., Kendra Kotlarski, EI, Kevin Furniss, Chris Orren

Client: Jermey Covey, Project Manager, Martin County Utilities

Old Palm City Vacuum Sewer and Water Main Extension, Martin County, Florida

Project Description/Nature of Work:
Old Palm City Sewer and Water Main Extension project involves the design and construction of a centralized vacuum collection sewer system into a highly developed neighborhood located in Stuart, Florida.



This project consists of approximately 75,600 feet (14.3 miles) of vacuum pipe, approximately 439 valve pits, a vacuum pump station, and force main serving approximately 1,072 ERC's.

Year Completed: Design Complete August 2021
Cost: $15M (Est.)
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E., Kevin Furniss, Chris Orren

Client: Phil Keathley, Project Manager, Martin County Utilities

Golden Gate Septic to Sewer Expansion – Stuart, Florida

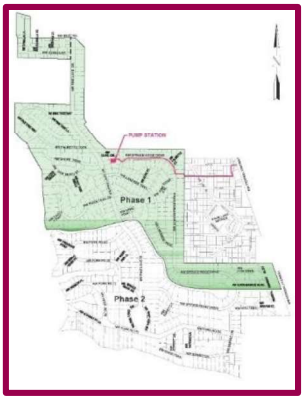
Project Description/Nature of Work:
The Golden Gate Septic to Sewer project involves the design and construction of a centralized vacuum collection sewer system into a highly developed neighborhood located in Stuart, Florida.

This project consists of approximately 57,000 feet (10.8 miles) of vacuum pipe, approximately 380 valve pits, a vacuum pump station, and force main serving approximately 1,280 ERC's.

Year Completed: December 2022
Cost: $8.5M (construction cost)
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E., Thomas Shaw, Kevin Furniss, Chris Orren

Client: Phil Keathley, Chief Project Manager, Martin County Utilities

North River Shores, Phase 1&2, Sewer Expansion Stuart, Florida



Project Description/Nature of Work:
Provide design plans and CEI services for the installation of a vacuum sewer collection system in the North River Shores subdivision located in Martin County, Florida. The project was completed with approximately 650 connections. Included in the scope was construction management, daily inspection, including a resident compliance specialist, field note reports, record drawings, and final certifications. The North River Shores, Phase 2 Sewer Expansion project involves the design and construction of a centralized vacuum collection sewer system into a highly developed neighborhood located in Stuart, Florida. This project consists of approximately 24,000 feet (4.5 miles) of vacuum pipe, approximately 140 valve pits, a vacuum pump station, and force main serving approximately 300 ERC's.

Year Completed: 2011/2019
Cost: $4.5M, Vacuum Station $1.5M, Collection Area: $4.5M
GWE Team: Jonathan H. Cole, P.E., Andrew J. Wickerson, P.E., Thomas Shaw, Randy Blackwell, Kevin Furniss, Chris Orren

Client: Phil Keathley, Chief Project Manager, Martin County Utilities

Seagate Harbor/Lighthouse Point Sewer Expansion, Martin County, Florida

Project Description/Nature of Work:
Seagate Harbor/Lighthouse Point, consisting of approximately 600 residential connections, was the first of three areas that were designated to receive a centralized vacuum sewer system (AIRVAC). Over 90% of all properties served are waterfront homes with minimum vacant lots priced in excess of $200,000. Construction took place over a twelve month time frame and was completed on time and within the allotted budget. Currently 95% of all residents are connected.

Year Completed: 2006
Cost: $2.1M funding secured by GWE through SRF
GWE Team: Jonathan H. Cole, P.E., Kevin Furniss, Chris Orren

Client: Phil Keathley, Project Manager - Martin County Utilities

Southport Unit 5 Vacuum Sewer Design, Port St. Lucie, Florida

Project Description/Nature of Work:
The Southport Unit 5 Vacuum Sewer Design project involves the design of a centralized vacuum collection sewer system into a highly developed neighborhood located in Port St. Lucie, Florida. This project involves the planning and design of approximately 11,000 feet of vacuum pipe, 12 buffer tanks, a vacuum pump station, and force main serving approximately 427 ERC's. Moreover, it utilizes buffer tanks that will replace existing lift stations so that all the primary gravity collection system can remain in place.

Year Completed: 2021
Cost: Vacuum Station: $1.5M, Collection Area: $2.5M
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E., Kevin Furniss, Chris Orren, Thomas Shaw

Client: Laney Southerly, P.E., Utility Engineering Manager, City of Port St. Lucie Utility Systems Dept.

El Jobean Vacuum Pump Station Project, El Jobean, Florida

Project Description/Nature of Work:
GWE is the EOR for the El Jobean Vacuum Station project that involves the design of a booster pump station and a centralized sewer station serving an older low lying, densely developed neighborhood located in El Jobean, Florida. In addition to the pump station design, GWE provided the system hydraulics and the QA/QC of the collection system, consisting of approximately 25,000 feet of main line pipe, approximately 114 valve pits, in two phases eventually serving about 612 ERC's.

Year Completed: 2021
Cost: $2M
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E., Andrew J. Wickerson, P.E., Kevin Furniss, Chris Orren

Client: Bruce R. Bullert P.E., Engineering Services Manager, Charlotte County Utilities Department

Wastewater Expansion Phase 2 Project (Ackerman/Countryman), Port Charlotte, Florida

Project Description/Nature of Work:
The Wastewater Expansion-Phase 2 (Ackerman/Countryman) Vacuum Sewer project involves the design of a centralized vacuum sewer collection system, vacuum station, and force main into a highly developed neighborhood located in Port Charlotte, Florida. This project involves the planning and design of approximately 17 miles of vacuum pipe, approximately 1,000 valve pits serving approximately 3,340 ERC's.

Year Completed: 2021
Cost Collection System: $14M, Vacuum Station: $1.5M (to date)
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E.,
Andrew J. Wickerson, P.E., Kevin Furniss, Chris Orren, Thomas Shaw

Client: Bruce R. Bullert, P.E., Engineering Services Manager, Charlotte County Utilities Department

East/West Spring Lake Wastewater Expansion Contract A, Port Charlotte, Florida

Project Description/Nature of Work:
The East/West Spring Lake Wastewater Expansion project involved the design and construction of a centralized vacuum collection sewer station located in the Spring Lake subdivision on Azaela Drive. This project involved the planning and design of approximately masonry concrete building, cast in place concrete vault, generator, vacuum equipment, and site work. The station serves vacuum sewer collection contract B and C.

Year Completed: Spring of 2016
Cost: Vacuum Station: $1.5M
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E. ,
Kevin Furniss, Chris Orren

Client: Bruce R. Bullert, P.E., Engineering Service Manager – Charlotte County Utilities Department

East/West Spring Lake Wastewater Expansion Contract B, Port Charlotte, Florida

Project Description/Nature of Work:
The East/West Spring Lake Wastewater Expansion project involved the design and construction of a centralized vacuum collection sewer system, water lines and reuse mains into highly developed neighborhoods located in the Spring Lake subdivision. This project involved the planning and design of approximately 68,300 feet of sewer mains, approximately 262 valve pits, water distribution lines, a central pump station, reuse and force main serving approximately 1,386 ERC's.

Year Completed: Spring of 2018
Cost: Vacuum Station: $1.5M, Collection Area B: $8.6M
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E., Kevin Furniss, Chris Orren

Client: Bruce R. Bullert, P.E., Engineering Services Manager, Charlotte County Utilities Department

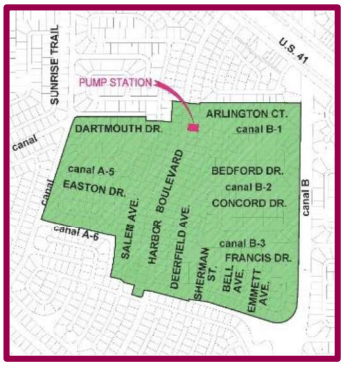
East/West Spring Lake Wastewater Expansion Contract C, Port Charlotte, Florida

Project Description/Nature of Work:
The East/West Spring Lake Wastewater Expansion project involved the design and construction of a centralized collection sewer system into highly developed neighborhoods located in the Spring Lake subdivision. This project involved the planning and design of approximately 44,000 feet of vacuum, approximately 343 valve pits, water distribution lines, serving approximately 809 ERC's.

Cost: Collection Area $5.8M
Year Completed: July 2017
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E., Kevin Furniss, Chris Orren

Client: Bruce R. Bullert, P.E., Engineering Services Manager, Charlotte County Utilities Department

East/West Spring Lake Wastewater Expansion Contract D, Port Charlotte, Florida



Project Description/Nature of Work:
The East/West Spring Lake Wastewater Expansion, Contract D project involved the design and construction of a centralized vacuum collection sewer system, a vacuum station and water main replacement for "Zones 11 and 12" in the Spring Lake subdivision.

This project involved the planning and design of approximately 22,200 feet of vacuum, approximately 168 valve pits, water distribution lines, a vacuum pump station, and force main serving approximately 381 ERC's.

Cost: Vacuum Station: $1.4M, Collection Area D $5.3M
Year Completed: Spring 2018
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E., Thomas Shaw, Kevin Furniss, Chris Orren

Client: Bruce R. Bullert, P.E., Engineering Services Manager, Charlotte County Utilities Department

Midway Boulevard Road Widening Project, Port Charlotte, Florida

Project Description/Nature of Work:

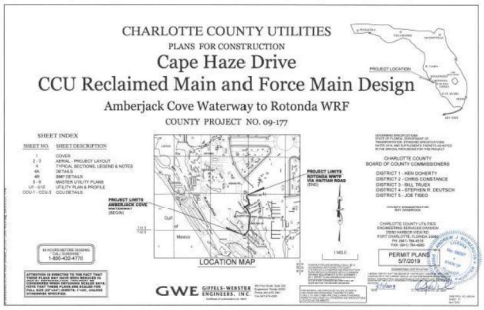
Charlotte County Public Works retained GWE as the prime design consultant for the Midway Boulevard Road Widening Project, a high-priority east-west arterial transportation corridor connecting U.S. 41 and Kings Highway within Port Charlotte. GWE provided all design and engineering for the project. The design fundamentally was for a two-lane collector to be widened to a four-lane roadway with four 12' wide travel lanes; 4' wide paved shoulders; grassed median, intersection turn lanes, 6' wide sidewalks, including crosswalks at side streets and lighting design. The project also included major upgrades to Charlotte County Utilities infrastructure including 4' diameter gravity sewer trunk main and primary water transmission systems. Stormwater modeling for the design of both dry and wet detention systems including large diameter conveyance pipes and culverts permitted through SWFWMD, was a major aspect of this project.

Year Completed: 2019
Cost: $1.4M
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E., Andrew J. Wickerson P.E., Kevin Furniss, Chris Orren

Client: Jeffrey A. Keyser, Project Manager, - Charlotte County Public Works

Cape Haze Drive Reclaimed Main and Forcemain Design, Englewood, Florida

Project Description/Nature of Work:



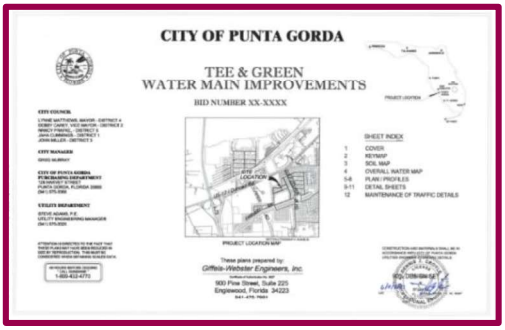
Reclaimed Water Main & Sewer Force Main. 16" reclaimed water main along Cape Haze Drive from Placida Road to the CCU Rotonda WRF for a total distance of approximately 8,000 LF. 12" sewer force main along Cape Haze Drive from Placida Road to the CCU Rotonda WRF for a total distance of approximately 6,750 LF. (GWE) served as the Engineer-of-Record on this project, which was designed in-house

Year Completed: 2020
Cost: Professional Fees: $170K, Construction Cost: $2.1M
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E.,
Andrew J. Wickerson, P.E., Kevin Furniss, Chris Orren, Thomas Shaw

Client: Thomas Dunn, P.E., Engineering IV, - Charlotte County Utilities Department

Tee & Green Water Main Improvements, City of Punta Gorda, Florida

Project Description/Nature of Work:



The project involves the planning, design and FDEP permitting of 4 and 6-inch diameter potable water main and associated appurtenances. Although the project is for the City, the work takes place within Charlotte County rights of ways. As a result, coordinating with separate entities to facilitate road crossing pavement restoration and asphalt overlay standards was necessary. GWE serves as the EOR on this project, which was designed in-house. This project will provide potable water service to over 60 residences in the Tee and Green Estates subdivision located just east of I-75.

Year Completed: April 2022
Cost: Engineer's Estimate: $342,000
GWE Team: Dennis J. Croyle, P.E., Mateusz Kalamon, EI, Kevin Furniss

Client: Steve Adams, P.E., Utility Engineering Manager, City of Punta Gorda

Phillippi Creek Septic System Replacement Program Area N, Phase 1, Sarasota, Florida

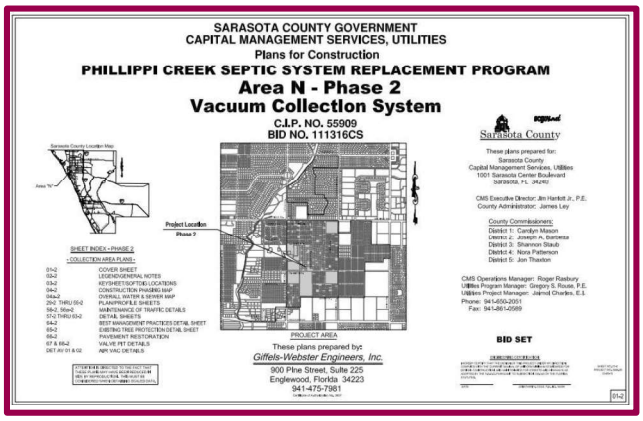
Project Description/Nature of Work:
The Phillippi Creek Septic System Replacement Program (PCSSRP) involves the design and construction and installation of a centralized vacuum collection sewer system into highly developed neighborhoods located in the Phillippi Creek Drainage Basin. Area "N" involves the planning and design of approximately 9 miles of vacuum mains, approximately 245 valve pits, water distribution lines and wastewater transmission systems and a vacuum pump station. GWE served as the Engineer of Record on this project, which was designed in-house. GWE also provided construction inspection as well as contract administration for this project.

Year Completed: 2011
Cost: $4.2 M
GWE Team: Jonathan H. Cole, P.E., Randy Blackwell, Kevin Furniss, Chris Orren

Client: John J. Saputo, IV, Project Manager, Sarasota County Public Works

Phillippi Creek Septic System Replacement Program Area N, Phase 2, Sarasota, Florida

Project Description/Nature of Work:
GWE assisted with the construction phase of the Area N, Phase 2 Project, and provided cost savings input and construction management throughout the construction of the project. Tasks included advising the COUNTY and assisting with administering the construction contract, providing daily field observation, and assisting with resolving conflicts and construction complaints.



Year Completed: April 2014
Cost: $4.7 M
GWE Team: Jonathan H. Cole, P.E., Kevin Furniss, Thomas Shaw, Randy Blackwell

Client: John J. Saputo, IV, Project Manager, Sarasota County Public Works

Phillippi Creek Septic System Replacement Program Area N, Phase 3, Sarasota, Florida

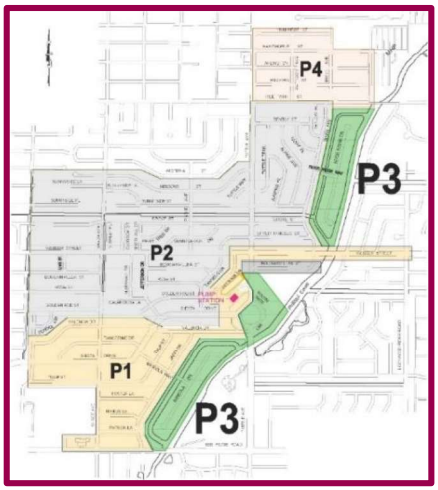
Project Description/Nature of Work:
This project involved the design of a *gravity sewer system* consisting of 4 lift stations, 5,000 linear feet of force main and 60 manholes, serving approximately 225 connections into a highly developed neighborhood located in Sarasota, Florida.

This project was initially designed as a low-pressure sewer system, however, as a result of resident input, the system was redesigned as a small "hybrid" gravity sewer system.

Year Completed: 2019
Cost: $3.1M
GWE Team: Jonathan H. Cole, P.E., Dennis J. Croyle, P.E., Kevin Furniss, Chris Orren

Client: John J. Saputo, IV, Project Manager, Sarasota County Public Works

Phillippi Creek Septic System Replacement Program Area D, Phase 3, Sarasota, Florida



Project Description/Nature of Work:
The Phillippi Creek Septic System Replacement Program (PCSSRP) involves the design and construction of a centralized collection sewer system into highly developed neighborhoods located in the Phillippi Creek Drainage Basin.

Area D, Phase 3 involves the planning and design of a *low pressure system* servicing isolated areas that pump to a master pump station in Area D, Phase 1.

Year Completed: 2012
Cost: $8.9M (Phase 1, 2 and 3)
GWE Team: Jonathan H. Cole, P.E., Randy Blackwell, Kevin Furniss, Chris Orren

Client: John J. Saputo, IV, Project Manager, Sarasota County Public Works

Phillippi Creek Septic System Replacement Program Area O & P, Sarasota, Florida

Project Description/Nature of Work:
This project involved the design and inspection services of a centralized *vacuum sewer* collection system, vacuum station, and water line replacement into a highly developed neighborhood located in Sarasota, Florida, between Clark Road, to the south, and Proctor Road to the north, and U.S. 41 to the west and Beneva Road to the east. This project involved the planning and design of approximately 12.9 miles of vacuum pipe, and 570 valve pits serving approximately 1,247 ERC's.

Year Completed: 2017
Cost: Collection system: $6.4M, Vacuum Station: $1M, Water Main: $4M, Total: $16.5M
GWE Team: Jonathan H. Cole, P.E., Andrew J. Wickerson, P.E., Kevin Furniss, Chris Orren, Thomas Shaw, Randy Blackwell, Dennis J. Croyle

Client: John J. Saputo, IV, Project Manager, Sarasota County Public Works

Sarasota County Midnight Pass 10" and 16" Water Main – Sarasota, Florida

Project Description/Nature of Work:
The project work consists of the construction of approximately 1,000 linear feet of ten through sixteen (10-16) diameter ductile iron water main installed by direct bury methods within FDOT rights of way in Siesta Key, FL. The proposed water main will be replacing the existing asbestos cement water main infrastructure. The existing pipe will be abandoned and removed or grouted in accordance with the drawings. Water services will be re-connected to the proposed main.

Year Completed: 2020
Cost: Professional Fees: $150K, Construction Cost: $600K
GWE Team: Dennis J. Croyle, P.E., Kevin Furniss, Randy Blackwell

Client: John J. Saputo, IV, Project Manager, Sarasota County Public Works

SECTION IV:
PROJECT CONTROL

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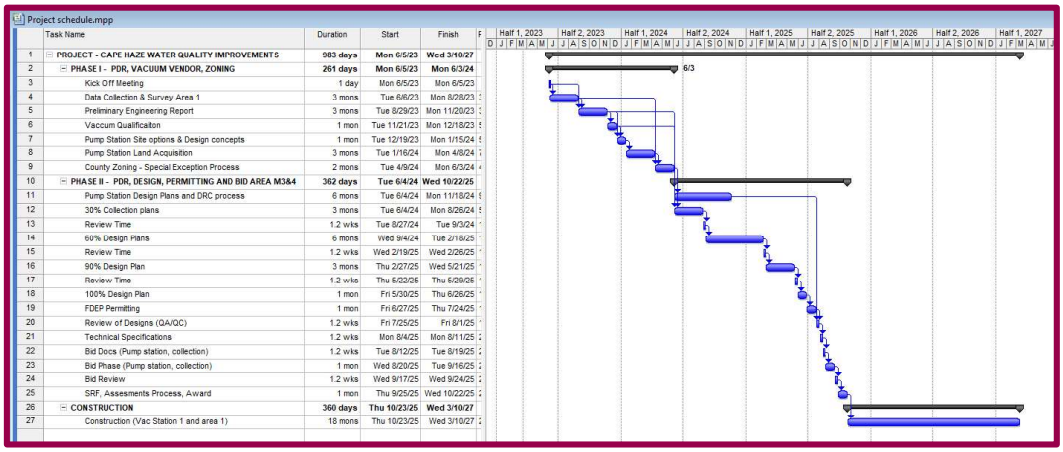
A. Schedule

1. What techniques are planned to assure that schedule will be met?

Delays in project schedules have created undue hardship and inconvenience to the County, but more importantly, to the very residents that would most benefit from the project. When residents wait for the completion of a delayed project, they have to live without the needed improvements and put up with the disruptions created by construction activities that continue beyond scheduled completion. There are several techniques that GWE can employ to assure that a schedule will be met as outlined below:

- **Developing a detailed project plan**: A detailed project plan helps ensure that all project tasks are clearly identified and that deadlines are established for each task. This will provide a roadmap for the project team to follow and allow for effective tracking of progress against the plan.
- **Using project management software**: Project management software such as Microsoft Project can help in planning, scheduling, and tracking the project. This will allow the project team to identify potential issues or delays and take corrective action as necessary.
- **Conducting regular project meetings**: Regular project meetings help ensure that everyone is on the same page and that progress is being made as planned. These meetings can also help to identify potential issues and discuss strategies for addressing them.
- **Assigning clear roles and responsibilities**: Clearly defining roles and responsibilities for each team member makes certain that everyone knows what is expected of them and can contribute to the project in a meaningful way.
- **Contingency planning**: It is also important to have contingency plans in place in case of unexpected delays or issues that can threaten to impact the schedule. This ensures the team is prepared to address any unexpected concerns quickly without delay to the project schedule.

The schedule will be detailed to match the negotiated scope of services. Our preliminary schedule suggests all the services will be provided over a 48-month timeframe, which is reasonable for a project this size.



2. Who will be responsible to ensure that schedule will be met?

The responsibility for ensuring that the schedule is met lies with the project manager, Mr. Dennis Croyle, as the E.O.R./PM. Dennis is responsible for overseeing the project and ensuring that it is completed on time and to the required quality standards.

To ensure that the schedule is met, Dennis will work closely with the project team to develop a detailed project plan, set deadlines for each task, and monitor progress against the plan. He will also be responsible for identifying potential issues or delays and taking corrective action as necessary to keep the project on track.

B. Cost

1. What control techniques are planned?

GWE employs several cost control techniques to deliver projects, both large and small, within budget.

Design Budget

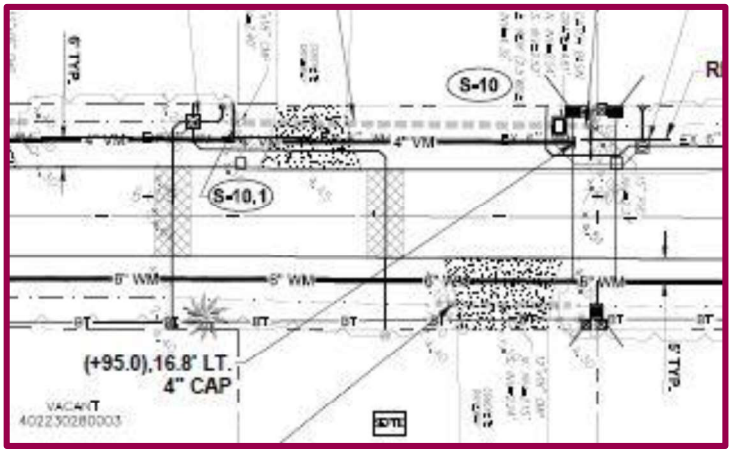
To ensure that the project stays within budget, first, we will develop a detailed plan to help identify all the costs associated with the project and ensure that they are accounted for. We believe the best method to control the cost of the design and permitting effort is to negotiate a "lump sum" contract with the engineer. To control the project and protect both parties, defining a detailed scope of services "up front" with a clear understanding, or meeting of the minds, is paramount. If the estimate for the engineering services exceeds the lump sum fee for items that are clearly "in-scope," the County is protected since that lump sum "controls" the engineering-related costs.

Additionally, it is important to have contingency plans in place in case of issues that may impact the project budget. This will allow the project team to respond quickly to keep the project progressing within budget. During design, we may find that we need additional drainage design for Public Works or aesthetic enhancements to the pump station. Should they be needed, the costs will have already been established, eliminating the need for any contract amendments and maintaining cost control. This will prevent the design team and the County from having to cover an unknown cost yet give the County flexibility should additional tasks be required.

Next, clearly defining roles and responsibilities for each team member can help ensure that everyone knows what is expected of them in terms of cost management. This will allow the project team to work together effectively to manage costs and keep the project within budget.

Construction Cost Control Elements

The GWE team will identify and quantify the costliest items contained in the design and seek alternatives to reduce overall costs while not jeopardizing quality.



One of the items that GWE specifically looks at for vacuum sewers for example is the "valve pit ratio," that is, the number of valve pits to home ratio. Sometimes we try to reduce the number of valve pits or increase the number of homes connected to each valve pit. This results in significant savings on the construction cost of installing a valve pit and the long-term maintenance of each valve pit can be reduced.

By reducing the number of vacuum valves, the total number to rebuild and maintain is reduced. However, this valve pit ratio needs to be balanced with the increase in PVC lateral costs. The fewer the valve pits, the more the 6" lateral is needed. GWE looks at prevailing unit costs for laterals versus valve pits installation to come up with the most efficient system to benefit CCU.

GWE uses this type of practice in all of our projects to help control costs where it makes sense without compromising the quality or effectiveness of the project.

We know that construction bids can vary widely and are dependent on several factors. For example, the general state of the economy when the private sector is "booming" can drive prices higher. Conversely, in downtimes, numerous contractors will bid, tending to drive prices down. Fuel and equipment costs are also a significant factor that is out of our direct control.

However, GWE still can help "control" some costs or at least anticipate costs, by monitoring recent bids from similar areas and updating the County with engineering estimates that are close to reality so that the County's budget can be adjusted accordingly. GWE has prepared cost estimates for each of our projects based on the most recent information. This information is then analyzed to ensure that current supply and demand trends do not produce inaccurate project costs and projections. Once exact quantity estimates based on the final plans are developed, the unit prices are multiplied by those units for a total cost estimate.

GWE prepares the bid and contract documents, working with its clients to produce concise, accurate packages that are clear to the bidding contractors. Producing vague plans will create a large spread in bids since the contractors will be unclear of the intent, and "cover themselves" with higher bids. In addition, if the quantities in the bid set are wrong and the ultimate project "overruns" the engineer's estimate of material, the final project cost will escalate, requiring change orders that do not reflect well on the project.

BID 2020000489 - SUMMARY OF PAY ITEMS – ACKERMAN VAC.SEWER COLLECTION ZONES 1 & 2 AND VAC. STATION

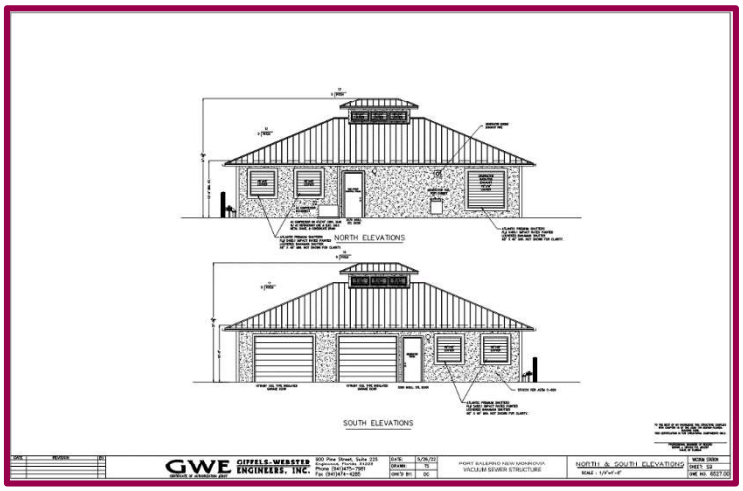
ITEM	ITEM DESCRIPTION	UOM	EST. QTY.	UNIT PRICE	EXTENDED PRICE
GENERAL					
1	Pre-Installation Video	LS	1	$ 15,400.00	$ 15,400.00
2	Surveying - Vacuum Collection System, Force Mains, Water Mains and Drainage Improvements	LS	1	$ 192,840.00	$ 192,840.00
3	Surveying - Vacuum Station Building and Site	LS	1	$ 8,050.00	$ 8,050.00
4	Erosion and Sediment Control, Silt Fence	LF	5,000	$ 2.25	$ 11,250.00
5	Maintenance of Traffic (MOT)	LS	1	$ 132,400.00	$ 132,400.00
6	Successful Subsurface Utility Locates (Pot Holing)	EA	500	$ 122.50	$ 61,250.00
7	Dust Abatement	DAYS	540	$ 180.00	$ 97,200.00
VACUUM COLLECTION SYSTEM					
8	3" PVC SDR-21 Vacuum Main	LF	3,860	$ 23.55	$ 90,903.00
9	4" PVC SDR-21 Vacuum Main	LF	32,440	$ 32.00	$ 1,038,080.00
10	6" PVC SDR-21 Vacuum Main	LF	10,060	$ 38.00	$ 382,280.00
11	8" PVC SDR-21 Vacuum Main	LF	4,420	$ 48.40	$ 213,928.00
12	10" PVC SDR-21 Vacuum Main	LF	1,850	$ 57.50	$ 106,375.00
13	4" PVC SDR-21 Gravity Sewer Service Lateral	LF	23,530	$ 27.63	$ 650,133.90
14	6" PVC SDR-21 Gravity Sewer Service Lateral	LF	5,190	$ 41.23	$ 213,983.70
15	Locate Balls and Marker Tape Vacuum	EA	960	$ 29.35	$ 28,176.00

2. Demonstrate ability to meet project cost control

GWE takes pride in developing detailed plans with accurate "take-offs" that result in projects that are delivered within budget. Once the scope of services has been defined, GWE has never requested additional funds for any in-scope engineering effort on any project, demonstrating the advisability of a lump sum contract to maintain control of costs.

GWE achieved cost savings on the Golden Gate septic to sewer project by recognizing the importance of vacuum station location and reducing the quantity of larger diameter vacuum mains. The project was coordinated with the County paving program to avoid costly redundant asphalt restoration and minimize public inconvenience. GWE's CEI staff also realigned many vacuum mains that were originally planned in the roadway, resulting in significant construction cost savings. The project was completed in December 2022 under budget at $8.5 million, compared to the engineer's estimate of $11 million.

Recently, in the Port Salerno/New Monrovia septic to sewer project, Martin County was able to secure a low bid amount of $23 million for the construction, which was well below the estimated cost of $25 million. This was made possible by our proactive approach to research cost increase trends in labor and material costs, and solicit local contractors during the design phase to create detailed cost estimates. This allowed us to accurately estimate project costs and control them throughout the construction phase.



3. <u>Who will be responsible for cost control?</u>

The responsibility for cost control falls to Dennis Croyle, the Project Manager, as he is responsible for overseeing the project as a whole and ensuring that it is completed within budget.

C. Recent, Current and Projected Workload

All key design and CEI staff members have been employed at GWE for numerous years providing stability and forming the core of our design experience.

We have strong availability to meet the County's needs as our private workload is very minimal, and we only have a couple of projects on the board for the coming year.

Key project personnel and their anticipated time commitments are noted in the following table:

Name	Percentages	
	Committed	Available
Jonathan H. Cole, P.E.	60%	40%
Dennis J. Croyle, P.E.	50%	50%
Kendra Kotlarski, EI	40%	60%
Andrew J. Wickerson, P.E.	20%	80%
Kevin Furniss	60%	40%
Chris Orren	50%	50%
Inspection Staff	10%	90%

Given our staffing availability, the GWE team will have no difficulty meeting any reasonable schedule.

SECTION V:
PRESENT PROPOSED DESIGN APPROACH FOR THIS PROJECT

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A. Describe proposed design philosophy.

Design Philosophy

The Cape Haze Water Quality Improvement Project is fundamentally like our past CCU septic to sewer projects. However, this community is exclusive and many of the homes are on the Intercoastal Waterway. Septic to sewer projects like this are expensive, disruptive, and unpopular with residents. For this reason, we think a ***flexible design philosophy*** should be considered.

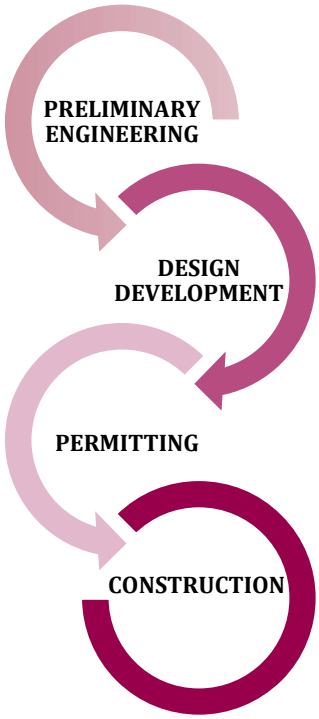
We believe that a good design is determined with the stakeholders in mind. CCU, who will build, own, and maintain the project must be worked closely with to ensure that the delivered product will meet the needs of the County in both the short and long term. This includes considering all aspects of a project design from the start until many years after the project is built including the cost to construct facilities, the costs associated with operating and maintaining facilities long term, providing the ability to keep systems operational during power outages, working closely with utility operations staff to understand their needs and concerns relative to utility operations, ease of maintenance and access, and much more. We prioritize providing the best results for the County.

Additionally, we understand the concerns of residents within the project area. From many years of experience in septic to sewer projects, we have handled countless customer concerns of various natures. Some of the primary worries are typically related to potential odors, noises, and concerns of tree removal, restoration/construction impacts, questions about the sewer system technology, the location of connections, and other inquiries. GWE is aware of the customers' concerns relative to a large construction project happening in their neighborhood and this is precisely why we design the project with also the residents in mind. GWE believes it is essential to deliver a final product that will benefit the residents by providing a system with high operational reliability and dependability, with protocols in place to eliminate any noise or odor problems, a design that minimizes or eliminates impacts to the unique neighborhood features which are valued by the residents (i.e. mature trees), utility buildings that blend into the neighborhood with appropriate landscape buffers, and a project that is delivered on time and within budget. We provide a Construction Hotline to address resident questions or concerns quickly and effectively during the design and construction process. Ultimately, the project is intended to serve the residents of Cape Haze and we have their best interest in mind throughout the entire project life.

This philosophy focuses on designing the sewer system that *minimizes* impact on the environment while providing the best service to the CCU staff and customers. For Cape Haze, this may include additional measures to protect trees or designing the pump station in a Coastal or Mediterranean style, with pastel colors and tile roofs, or taking additional efforts on reducing odor and noise more than we have done in the past. We understand this community is tranquil, secluded, and serene so our approach to the design philosophy should be similar.

Proposed Work Plan

We will focus on team coordination, and calm reasoning throughout the process, and understand that things change during the process.



We start with the Preliminary Engineering Report (PER) that will identify key issues and outline options so that the most appropriate solution for providing central sewer can be made. A cost-benefit analysis of alternative sewer technologies will be performed to aid in the selection process. Although cost is a driving factor in the selection of a sewer system technology, sometimes it makes more sense to spend more money to gain additional non-financial benefits. Conflicts and constraints such as canals, major road crossings, bridges, and storm drain crossings must be identified and considered during the PER phase.

Once the recommendation of the PER is agreed upon by CCU, then the design development can commence. This begins with field surveying that will be used to enhance base design plans for development through the 60-90-100% plan production. At each stage of plan development reviews and discussions will be held with CCU to ensure concurrence.

Sometimes there may be new information revealed during the design process that was never anticipated. In these times, the team must not be rigid and adapt to new information for better outcomes throughout the process.

Our philosophy also ties to our work plan and schedule. To get the project moving, many times we split the areas with the design and permitting to allow for the construction of one area first rather than the entire project.

As we approach the final design, we provide quantity take-offs, obtain FDEP permits (and other permits as necessary), and prepare final documents so that CCU will have “shovel-ready” plans ready to bid.

Some of the ***key elements*** of our work plan are further elaborated as follows:

Kick-Off Meeting

The initial communication protocol and review with the design team and CCU as to the overall goals will be reviewed and the completion dates will be established.

One of the first things to be identified is the critical items that require a long lead time. Identification of those elements and providing the necessary input early is key so that those items can be secured as we work on the balance of the project. For example, the pump station site must be selected and while perhaps not actually purchased, it should be secured so that the design can progress. Without a pump station site, we are not sure where the sewer collection line network will terminate; hence, we cannot proceed far with the design.

Data Collection

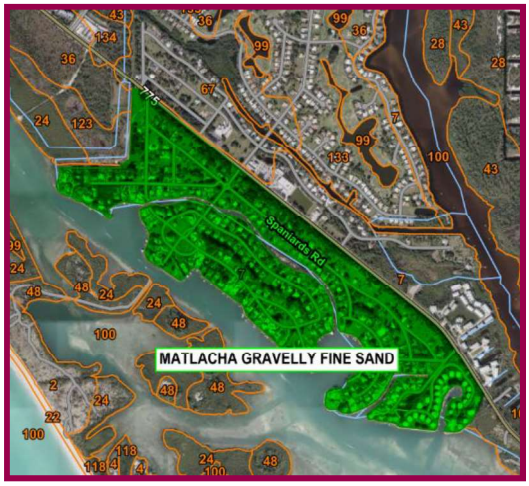
During the first several weeks of the project, the existing plans, existing surveys, and GIS data will be reviewed. If additional information is required or new information needs to be collected, it can be accomplished early in the design process. We will release our sub-consultants as early as possible to obtain the required data and allow time to review the findings before detailed design ensues.

Survey

We will kick off the survey task immediately as this task can be time-consuming and we want to prevent any possible delays as this task is *critical* to the project design schedule.

Geotechnical

Once the PER is finalized, we have conceptual layouts of the station sites and even possibly the collection areas, our geotechnical sub-consultants will begin the subsurface exploratory investigations to obtain information on the physical properties of soil earthworks, rock, and foundations for proposed structures. Subsurface exploration usually involves soil sampling and laboratory tests of the soil samples retrieved via SPTs or hand augers.



We looked at soils in the area using the National Resources Conservation Service (NRCS) soil data. We found that the area is primarily Matlacha gravelly fine sand. This soil is comprised of gravelly fine sand and fine sand, has a relatively flat slope, a high groundwater table, and no restrictive features such as rock or marl. The soil data available does not raise any considerable concerns for utility installation.

Environmental

Conducting appropriate environmental investigations in this area will be essential to identify any protected species or unanticipated environmental concerns. This task will be done during the preliminary engineering phase such that any findings are considered early to eliminate unfortunate surprises once the detailed design is already underway.

Subsurface Utility Engineering

Subsurface investigations help to identify substandard pipes which require replacement or improvements. It is also useful in verifying the location of pipes which can increase the accuracy of design plans and prevent costly field conflicts.

Archaeological/Historical/Cultural

During the preliminary engineering phase, we will begin the investigation of archaeological/historical/cultural resources to ensure there are no problems encountered during construction.

Preliminary Engineering & Design

In the preliminary engineering phase, we will investigate alternative sewer technologies and make a recommendation in the PER on which technology, or perhaps a combination of technologies, will best serve the Cape Haze area. With CCU agreement on the recommended sewer system type, GWE is prepared to design the sewer system whether it be vacuum, low-pressure, gravity, or any combination of technologies.

Existing Septic System Locations

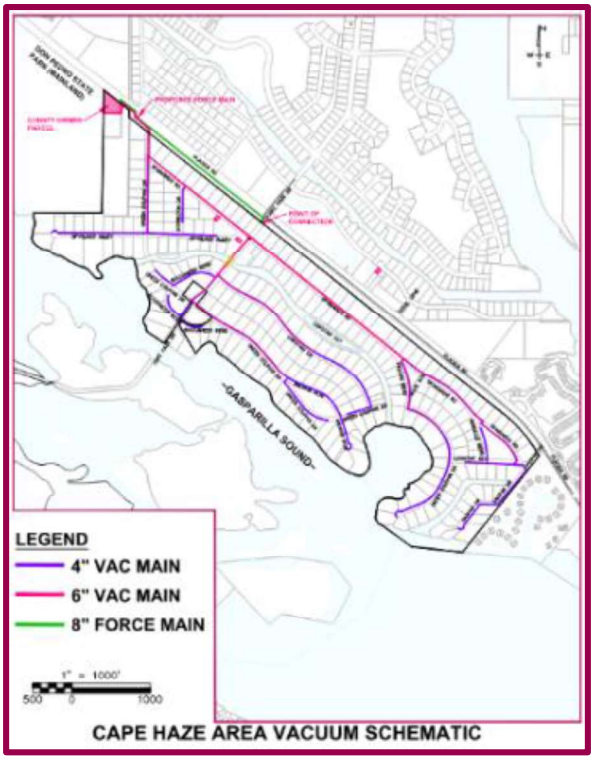
Regardless of the sewer collection system, to prepare the best plans, the location of all existing septic systems must be determined. We understand that most of the existing homes are served by septic tanks which will need to be located and shown on the plans. To allow customers to easily connect to the sewer system once it is installed, the location of their septic system needs to be considered when designing the collection system.

GWE has devised and implemented a process to more efficiently determine septic system locations, as compared to field locating each tank, which is explained in greater detail in Part D of this Section.

Vacuum System Design

A vacuum system and/or a hybrid vacuum system will likely be assessed during the development of the preliminary engineering report. If a vacuum system is selected as the optimal sewer technology to serve the area, there is no more experienced firm to design the vacuum system than GWE. We have already prepared a preliminary layout and performed preliminary hydraulic calculations as an initial "check" to verify the feasibility of a vacuum sewer system in this area. We believe the Cape Haze area is a good candidate for this sewer technology.

There are four (4) major items to consider when laying out a vacuum system once a site has been secured: multiple service zones, minimizing pipe sizes, minimizing vacuum losses, and valve pit or connection spacing. The GWE team is seasoned in the "Do's and Don'ts" of vacuum systems which has been earned through decades of project experience, studies, and observations.



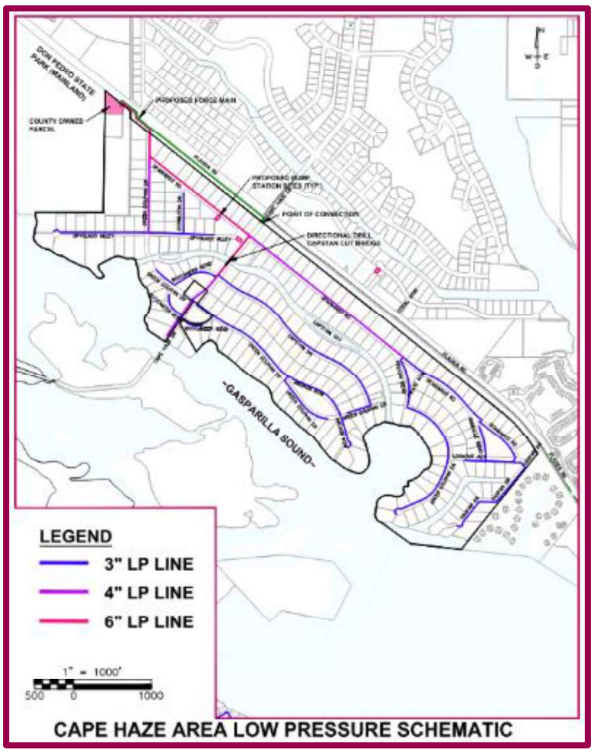
CAPE HAZE AREA VACUUM SCHEMATIC

Low Pressure Sewer Design

During the preparation of the preliminary engineering report, we may analyze the possibility of using low pressure sewer as an alternative option to serve the area.

If a low pressure system is selected for the Cape Haze area, our designers will analyze the existing sewer infrastructure with assistance from the County and make recommendations on the best method for connecting to the system.

A conceptual layout of a low pressure sewer system to serve the area is shown.



CAPE HAZE AREA LOW PRESSURE SCHEMATIC

Gravity Sewer Design

To satisfy the requirements of the SRF preliminary engineering report, a traditional gravity sewer system may be analyzed as a possible sewer technology to serve the project area. We suspect that with the adjacent tidal waters, gravity may be problematic due to the dewatering issues.

If a gravity system is selected for the Cape Haze area, our designers will make recommendations on lift station sites and the best method for connecting to the system.

Force Main Design

Regardless of sewer technology, some force main design will be needed. The hydraulic design of the force main system is critical to ensure that the wastewater can be moved efficiently through the pipeline. This includes determining the flow rate, velocity, and pressure requirements for the system. Elevation changes in the force main system should be minimized to reduce the potential for hydraulic issues such as airlocks, which can cause the system to fail. The design of the force main system should include provisions for easy access and maintenance, in other words, "not too deep".

Potable Water Design

The project includes the installation of new potable water mains to serve the area. The exact condition of the existing mains is unknown, and they will be assessed to investigate the possibility of converting the existing water mains to reclaimed water distribution mains. This will be investigated in the preliminary engineering phase and recommendations will be made.

We expect that the new water mains will be installed on the opposite side of the road from the existing water mains. In highly developed areas the goal is to avoid service interruptions and minimize the likelihood of construction conflicts. Our designers will look closely at the sequencing of the water main replacement and verify the connections to existing mains to avoid disruptions and less than ideal connection scenarios.

Reclaimed Water Investigation & Design

During the preliminary engineering phase, GWE will assess the possibility of converting the existing potable water mains to reclaimed water distribution mains. The PER will make recommendations based on known information. Pipe improvements or perhaps replacement if the condition warrants replacement or if the pipes are asbestos cement will be proposed as part of the project if it is recommended in the PER.

Pump Station Considerations

Several key elements should be considered during pump station design to ensure that the finished product will satisfy the needs of the County and the residents. GWE is well-versed in identifying these considerations and addressing each concern that some firms may overlook or deem unimportant.

Pump Station Site Selection

The pump station and system design start with the site selection. The pump station site is ***key***. Two fundamental criteria are vital when locating a proposed station: system hydraulics, or the ability of the selected site to serve the entire collection area(s), and "non-hydraulic" issues such as compatibility with the neighborhood. From a hydraulic standpoint, the site or sites should be located so that the main line distance from the station to the extremities of the collection area, including system losses is within design parameters.

A matrix of potential pump station sites will be finalized based on the preliminary research of available land and will be ranked based on several parameters such as hydraulic favorability, cost, proximity to residents, environmental considerations, zoning compatibility, and any other factors which may affect the site selection process. We provide an overall map to the County that highlights several potential sites which are prioritized so that if one purchase falls through, a backup site can be immediately identified and pursued.

Depending on the sewer technology or technologies selected to serve the area, there will likely be one pump station design needed. The preliminary engineering phase will identify the number and type of pump stations needed for each alternative sewer collection system evaluated. Pump station sites will be identified and ranked in order of recommendation. Depending on the pump station type and location, there may be additional measures above and beyond what is typically required of a pump station to enhance the aesthetics of the station and reduce the potential for unwanted noise and odors. Certain sewer technologies are more prone to these issues and GWE will ensure that all concerns are appropriately addressed.

Zoning "Special Exception", DRC, and Environmental Review

Pump stations are considered "essential services" and are either allowed "by right", but most times especially when located in a residential area, a special exception is required. This was done for Spring Lake and Ackerman and we are very familiar with going through the special exception process for pump stations to develop a workable concept and buffer plans for the selected site. A preliminary and final site plan approval process is necessary

before the contractor applies for a building permit. We did this for El Jobean, Ohara, and many other commercial projects within the County and are familiar with the requirements.

Neighborhood Compatibility

The pump station should be designed to aesthetically blend in with the neighborhood. GWE tailors each of our pump stations to "fit" the specific area. We have designed numerous pump stations with a scalloped metal tile roof with a European flair, some with false window facades, and even "Key West" styles over the years. In some instances, our pump stations look like the "nicest home" in the neighborhood.

Buffering

We typically add fencing, gates, and landscape buffers for our pump stations which not only helps separate the facility from the neighbors but also provides additional security for the facility.

Odor Control

GWE was the first engineer to design a mulch bed odor control system for vacuum stations in this area. It acts as a biofilter for odor control and has worked exceptionally well, and the mulch bed is now the standard for all vacuum stations.

We have also designed "air scrubber" odor control systems which are suitable for a variety of pump station applications. Air scrubbers are an effective and reliable solution for controlling odors, especially on sites with a smaller footprint.

We anticipate that odor control will be a primary concern for any pump station constructed within this area.

Noise

Typically, neighbors are concerned about the potential noise from a pump station. While there may be some "humming" when the pumps are running, generally it's no louder than a residential air conditioner.

GWE has implemented many techniques for reducing pump station noise, especially in our vacuum stations which can have several pumps running at once. We have used louvers, buffers, and even sound attenuation blankets to limit noises from the pump station. These measures have been effective in previous projects at reducing the noise outside of the pump station building and producing results that are well within the code limits for noise.

Regardless of the pump station type, measures will be taken to reduce any noise coming from the proposed pump station.

Building Heat Dissipation and Cooling

If it is desired to construct a building to house the pump station, consideration must be given to heat dissipation measures. Pumps generate a significant amount of heat which must be addressed to protect the equipment and also provide safe working conditions for operations staff who may need to enter the building from time to time.

If a vacuum station is selected, the vacuum pump exhaust heat is a significant contributor to excess heat in the building. To address this, GWE will design under-slab discharge lines to get that heat outside as soon as possible.

The vacuum pump discharge will be turned down into the concrete to an under-slab manifold that absorbs heat while it directs the air to the odor control bed. GWE has found through experience on past pump station projects that this is a very effective and affordable method for heat dissipation.

To further reduce heat in the building, we incorporate natural cooling elements such as louvers and frame the ceiling with scissor trusses and a cupola to direct the heat up and out of the station. Blowers are used to help circulate and evacuate the warm air from the building.

Air-Conditioned Control Rooms

To keep the controls cool, we design a separate air-conditioned control room in our pump stations.

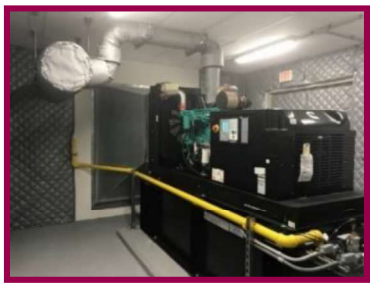
Access and Hoists

Pumps will need to be changed from time to time. GWE has designed overhead doors, loading docks, or removable grates allowing access and replacement of pump station equipment relatively easy.

If a vacuum station is selected, it is ***even more critical*** to consider how staff will access equipment in the future since there is a lower level "basement." To remove sewage pumps, we design lifting beams and hoists as part of our structural design.

Generator

To continue to provide reliable sewer service, even during a power outage, we propose one large generator at each pump station for emergency use.



For our vacuum stations, we have designed generators both inside the pump station building as well as outside of the building. After Hurricane Ian, the County experienced a long-term power outage. All vacuum stations were able to remain in operation with no service interruption to residents.

GWE is experienced with designing and understands the importance of providing a backup generator at pump stations to maintain service to residents, especially during emergencies.

Structural Design – Concrete Waterproofing & Buoyancy

If vacuum is selected as the proposed sewer technology, special consideration must be given to the vacuum station building, especially the pit or "basement."

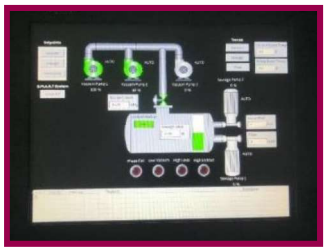
The Cape Haze area has a high groundwater table, and the vacuum station pit must be constructed to withstand long term water exposure. GWE has designed several vacuum stations in areas of high groundwater successfully and is prepared to address this problem. Not only do we plan for this with dense concrete mixes, waterproofing admixes, and exterior pumping systems, but we can also investigate using sheet membranes and cold fluid systems to provide additional assurance. Vacuum station buildings are a significant investment, and they should be protected accordingly.

Similarly, due to the high groundwater table, there are issues with building the vacuum station pit. In addition to gravity loads, buoyancy uplift forces must be calculated to ensure that the building will not float out of the ground during construction. In addition to a heavier reinforcing design, we specify special underdrains, and a foundation pump to keep the water out of the "basement."

Vacuum stations are most susceptible to these issues of waterproofing and buoyancy, but the same principles can apply to a standard pump station that is built in an area with a high groundwater table. It is essential to have designers who are aware of these challenges and prepared to address them as GWE has done numerous times.

SCADA and Controls Operations

We understand the need to interface and the ability to perform a supervisory operation with your equipment. Our pump station designs include monitoring of all the station equipment and control selection tailored to the CCU's standards and desires. Our design includes monitoring equipment and control selection, development of a theory of operation, and internal SCADA connections with connections to the communication infrastructure system.



Communication Infrastructure and Methods

It may make the most sense for the SCADA data to travel over the pre-established Data Flow Systems (DFS) remote telemetry network/Modbus protocol. However, we understand the master plan prepared by McKim and Creed will provide County Wide direct wired fiber optic connection TCP/IP protocol or even cellular.

Either way, our track record has experience delivering SCADA to similar systems for both methods. Our services will consist of providing input and output items in the RTU panel as either analog or digital signals from the station PLC.

Cost Analysis

At the conclusion of key milestones, as well as the final design, a cost analysis will be conducted in-house. Current unit costs based on recent projects will be applied to the quantities to determine an estimated construction cost to ensure the project is within budget guidelines.

Permitting, Technical Specifications, & Bid Documents

Permits with FDEP will be applied for at the 90% level. Technical specifications will be developed as the design process moves forward. At the same time, detailed Bid Documents will be prepared.

Bidding & Review of Bids

Bid packages will be assembled in concert with CCU and a pre-bid meeting will be scheduled. It's quite likely that multiple bid packages may be necessary. For example, we divided East/West Spring Lake into three individual bid packages, one for the Vacuum Station and two separate collection areas. This allowed the County to get a jump start on the station, which not only has a long lead time for construction and obtainment of AIRVAC skid units but of course, must be up and running before any customers can be connected.

Funding Sources

SRF (State Revolving Funding) and other funding will be explored, and the GWE team will provide engineering documentation for fund application which will be an ongoing task. We have routinely done this for other entities including Englewood Water District, Sarasota County, and Martin County.

Cooperative Work Program

Our main office, established in 1992, is located just up the road from the Cape Haze project. No other firm with equivalent *septic to sewer* experience has its main office located any closer to the project than GWE.

Moreover, our office has ample space for utilization by CCU staff.

With our close proximity and available office space, CCU engineering staff is welcome to participate throughout the design and construction process using our facility as a field office to review and offer cooperative input.

Advantages:

- **GWE's main office is located close to the project:** CCU engineering staff can easily drive to the site should questions arise during design (or construction) to review issues directly with our staff.
- **GWE - CCU working relationship:** GWE and CCU have worked together on many *septic to sewer* and other utility projects throughout the decades**.** We understand CCU's needs and have a great relationship with CCU staff, so working together as the plans progress will be a benefit.
- **Cost-effectiveness**: With the CCU engineering staff involved in the review process, there may be less need for formal review meetings, which can help streamline the process.
- **Education and training**: The cooperative work program can also provide an opportunity for CCU staff to learn and get trained on the specific design requirements working with our engineers right here at our GWE office.

Disadvantages:

- **Office location:** Unlike GWE, other firms may not have their office located close to the Cape Haze project. If not, a cooperative effort trying to use an office that is located further from the site may be counterproductive and not worth the additional travel and effort. Having the CCU engineering staff involved in the review process at an office located further from the site could extend the time taken to complete the project.

In summary, our office location, and experienced design staff combined with our office size allows for a good cooperative work program between GWE and CCU, which will benefit the overall project.

Public Outreach

This task will continue with the same key design members and will also last during both the design and construction process. Often, questions arise from the public that are more technical in nature since they are not familiar with the septic to sewer construction concepts. Many times, the residents don't want to hear from what they perceive to be just a "PR Firm" trying to "sell" a project. For this reason, our engineers routinely attend public meetings to offer technical input to public concerns.

Our key staff has also been on the "paying end," because some of us live or own property in the Englewood Water District's vacuum expansion areas, and one of our team members lives within the CCU vacuum expansion areas and have had to pay those fees directly, making us quite empathetic to the public's concern. The GWE team is very experienced and adept at garnering public support for vacuum sewer projects, and this same staff has successfully worked with CCU staff at public meetings for prior projects.

B. What problems do you anticipate and how do you propose to solve them?

Several anticipated problems will need to be investigated and addressed throughout the design process. GWE is prepared to address each problem as described below.

Selecting a Sewer Technology

Determining the best sewer technology to serve a given area can be a complex process and several factors must be incorporated into the selection process:

- **Conceptual layout**: In the preliminary engineering phase, we develop conceptual layouts for alternative sewer systems to help identify unique challenges or limitations for each sewer technology (i.e. a bridge crossing is not problematic for low-pressure, but is problematic for gravity and vacuum sewer), prepare quantity take-offs and cost estimates, and assess several different options for methods by which to serve the area with central sewer. Sometimes, one or more sewer technology is recommended based on project specific constraints and considerations. GWE will look at all options to provide the most efficient collection system to serve the specific area or sub-areas if appropriate.
- **Cost**: The cost of implementing new sewer technology can be a significant initial cost. To address this issue, it is necessary to conduct a cost-benefit analysis that considers both the short-term and long-term costs and benefits of the technology. It is also crucial to identify potential sources of funding, such as grants or loans, that can help offset the initial costs.
- **Maintenance requirements**: Every sewer technology requires some degree of maintenance to function optimally. The maintenance requirements can vary significantly depending on the technology selected. To address this issue, it is essential to evaluate the maintenance requirements of each technology and determine the resources required to maintain the system over its lifetime.
- **Environmental impact**: The selection of a sewer technology can have a significant impact on the environment. It is important to consider the environmental impact of the sewer system and identify measures to mitigate any adverse effects. For example, if the technology involves extensive open-cut trenches, it may be necessary to design pipelines in the roadways to minimize the impact on the trees. Similarly, some sewer technologies are more susceptible to leaks or main breaks that may be difficult to detect or locate, causing adverse environmental impacts.
- **Public acceptance**: The selection of a new sewer technology can be met with resistance from the public, particularly if it involves changes to established practices or infrastructure. To address this issue, it is essential to engage the public and stakeholders early in the selection process, communicate the benefits of the technology, and address any concerns they may have.

Selecting a sewer technology whether it is gravity, vacuum, low pressure, or a "hybrid" system can be challenging. Through conducting a comprehensive preliminary engineering report that considers the costs and benefits, evaluates the maintenance requirements, addresses the environmental impacts, and engages stakeholders, it is possible to identify the most appropriate technology and ensure its successful adoption.

Pump Station Site Selection & Considerations

The selection of a suitable pump station site or site(s) depending on the sewer technology selected and addressing the "*not in my backyard*" issue is probably the most significant decision that affects the entire project outcome. Not only does the integrity of the system revolve around the pump station site(s), but it can quickly become the focus of adverse publicity due to perceived concerns relative to aesthetics, noise, and odor.

Normally, we recommend using land currently owned by the County, and there is an option for that at 8470 Placida Road. We also researched

the MLS database to locate potential lots that are currently for sale. We located one parcel for sale at 510 Spaniards Road listed for $215k.

The sewer technology selected to serve the area also impacts the ***specific needs of the site***. For example, a vacuum station requires a larger site than a standard lift station site.

We already ran preliminary vacuum hydraulics using the County owned land site as a "worst case scenario" (i.e. not hydraulically favorable) pump station location, coupled with the bridge vacuum main crossing hydraulics, to confirm that vacuum sewer, or perhaps a hybrid system, appears to be a feasible option to serve the area.

PROJECT: Charlotte County - Cape Haze
LINE: EOL GREEN DOLPHIN DR

GWE
Vacuum Sewer System

PROJECT NUMBER: 2023.11
MAX FLOW: 0.39 gpm / ERC
DATE: 3/31/2023

STREET OR OTHER NOTES	MAIN LINE LENGTH	PIPE SIZE	HOMES	Q MEAN	Q ACC'M	HL/ 100'	HEAD LOSS LINE	TOTAL STATIC LIFT	NUMBER LIFTS	STATIC LOSS	SUB TOTAL FRICTION	SUB TOTAL STATIC	PIPE SIZE 3"	4"	6"	8"	10"
EOL GREEN DOLPHIN DR	1,500	4	22	4.3	8.6	0.00	0.07	3	2	2.33	0.07	12.33		1,500			
		4		8.6	8.6	0.02	0.00			0.00	0.07	10.00		0			
CONT. GREEN DOLPHIN DR	520	6	5	9.5	10.5	0.00	0.02	1.5	1	1.00	0.08	10.00			520		
		6		10.5	10.5	0.00	0.00			0.00	0.08	9.00			0		
CONT. PELICAN BEND	680	6	7	11.9	13.2	0.00	0.03	1.5	1	1.00	0.11	9.00			680		
		6		13.2	13.2	0.01	0.00			0.00	0.11	8.00			0		
SPANIARDS RD		6	44	21.8	30.3	0.01	0.00			0.00	0.11	8.00			0		
		6		30.3	30.3	0.03	0.00			0.00	0.11	8.00			0		
CONT. SPANIARDS RD	2,520	6	39	37.9	45.5	0.04	0.96	4.5	3	3.00	1.08	8.00			2,520		
		6		45.5	45.5	0.05	0.00			0.00	1.08	5.00			0		
CONT. SPANIARDS RD	1,650	6	13	48.0	50.8	0.06	0.98	4.5	3	3.00	2.05	5.00			1,650		
		6		50.8	50.8	0.07	0.00			0.00	2.05	2.00			0		
CONT. GREEN DOLPHIN DR	340	6	1	50.8	50.9	0.07	0.22	1.5	1	1.00	2.28	2.00			340		
		6		50.9	50.9	0.07	0.00			0.00	2.28	1.00			0		
CONT. PLACIDA RD	490	6	0	50.9	50.9	0.07	0.32	1.5	1	1.00	2.60	1.00			490		
		6		50.9	50.9	0.07	0.00			0.00	2.60	0.00			0		
TO VPS	100	6	0	50.9	50.9	0.07	0.07			0.00	2.67	0.00			100		
TOTALS -	7,800		131		50.9		2.67	18	12	12.33			0	1,500	6,300	0	0

Pump Station Noise, Odors & Aesthetics

In previous pump station projects, we attenuate noise using louvers, buffers, and even sound attenuation blankets so that there are limited sounds from the pump station. We pioneered the use of mulch beds which are sized to minimize odors and we have designed alternative odor control units such as air scrubbers. Having designed and constructed so many wastewater pump stations on small lots in residential neighborhoods, we have the experience to address odor, noise, and aesthetic issues.

One of the big advantages of retaining a firm that has done so many local pump station projects is that we have been through just about every potential issue with neighbors.

It's bad enough to have a large-scale project that costs residents a significant sum; but if you are also introducing a new building that everyone will see, you will want a firm that has proven experience with over two dozen stations with architectural looks that are both practical and aesthetically pleasing.

High Groundwater

Due to the coastal location of the project area and the lower lying ground elevation, a high groundwater table is expected and should be considered during the project design. In areas like this, deep excavation depths should be avoided or minimized and special consideration must be given to the pump station building to ensure the structure will not be adversely impacted by fluctuating groundwater levels.

FEMA Flood Zone

According to the recently updated FEMA flood maps, the project area encompasses several flood zone designations including Coastal A, 10AE, 9AE, 8AE, 11VE, 12VE, and X. The County owned land is located in flood zone 9AE and therefore any building constructed here will need to be elevated.

Narrow Rights of Way

Generally, the average right-of-way width in the area is about 50 feet wide. GWE has plenty of experience in navigating the challenges associated with narrow rights of way in developed neighborhoods such as this one.

Maintenance of traffic will be a key component of the project and identifying all potential conflicts early on in the design process will be essential to prepare quality design plans to avoid conflicts and minimize disruption.

Restoration

The Cape Haze project area is a unique neighborhood that will require specific attention and care to navigate the project specific conditions. GWE performed a preliminary walkthrough of the area and noted several large banyan trees that are still standing after the recent Hurricane Ian, large amounts of well-tended landscaping, and decorative driveways. It is important to be aware of these features and to explore all options to avoid or minimize impacts to these elements which will increase project cost, cause environmental impacts, and may upset the neighbors/residents in the area.

Bridge Crossing

There is one canal and bridge that subdivides the area. One of the disadvantages of vacuum versus low pressure is that bridge crossings can be difficult because specific slopes must be maintained and there can be significant hydraulic losses incurred by multiple lifts needed.

The Capstan Cut Waterway Bridge was built in 1993 and has an existing water main mounted to the northwest side of the bridge. Since the bridge is relatively old, a bracket connection for utilities on the side of the bridge will require structural analysis; or a separate pile-supported aerial crossing structure dedicated just for utilities may be needed. Various options depending on the sewer technology selected will be investigated for feasibility and cost effectiveness. Fortunately, the bridge is relatively flat and we suspect that it can be crossed with vacuum mains without exceeding the recommended hydraulic loss limits.

Reusing Existing Mains for Reclaim Water Distribution

The decision to reuse existing potable water mains as reclaimed water distribution mains will need to be thoroughly investigated. This suggestion can be tricky because a choice will have to be made for which side of the road to locate the new sewer and water on.

One solution is to install new water mains on the opposite side of the road. This does three things: First, it eliminates any problems with water/sewer separation issues. Secondly, it allows customers to be switched over to the newly installed water system without interruption. Third, while the sewer is being installed next to the existing water mains (future reclaimed water mains) conflicts with the sewer can be adjusted and repairs to damaged pipes or the replacement of pipes can be done.

Public Acceptance & Resident Concerns

One major advantage of retaining a firm that has successfully completed numerous septic to sewer projects in and around Charlotte County is that we have extensive experience with resolving complaints and concerns with the public. It is normal to have concerned residents when introducing a large scale utility project of this nature.

GWE maintains a “hotline” number (1-866-556-2200) during both the design and construction processes. This is a “toll free” number for residents to call to discuss the status of the design or their specific needs during construction. All design and construction issues are logged into a GWE database and forwarded to the appropriate personnel for resolution and follow-up. The “name of the game” is to be able to address the concern keeping complaints from “going up the ladder” and keeping customers informed as to the resolution of their issue.

Easement Acquisition

The acquisitions of easements are a time consuming process, particularly if you don’t have a willing seller. The time and money it takes to secure easements can delay a project. Securing easements requires parcel sketches, legal input, and the associated County acquisition process.

First off, GWE acts diligently to reduce the number of required easements in the project area by realigning the main lines of the system whenever possible. This will be accomplished by analyzing alternative pipe corridors and designing around potentially expensive easements. Yet sometimes easements, despite our best efforts, are necessary for an efficient design.

When easements are unavoidable, GWE segregates the needed easements into two categories--namely "critical" easements, and "secondary" easements. Critical easements are those that are necessary to build the "main line." They are identified early on and forwarded to the utility to maximize the acquisition time.

Existing Utilities

Unknown, existing utilities are classic magnets for delay and cost claims by contractors in many large infrastructure projects. Like most firms, GWE provides the design plans to all the known utilities and plots the best available information on the plans. After the known utility information is plotted, we go back into the field and conduct further subsurface utility locations using our ground penetrating radar in specific areas of concern. We pinpoint conflicts and plot additional existing utility information right on the plans, as we did for the East/West Spring Lake project.

The goal of subsurface utility exploration (SUE) is to mitigate costs associated with project redesign and construction delays and to avoid the risk and liability that can result from damaged underground utilities. Non-destructive methods are used to determine the presence of subsurface utilities and to mark their horizontal position on the ground surface. A conflict matrix is also created to evaluate and compare collected utility information with project plans, identify conflicts and propose solutions.

Drainage Infrastructure Replacement

As part of any utility project, a decision will need to be made regarding the extent to which drainage gets replaced. The intent to improve all the drainage within the project rights of way could be very costly. Ideally, this means any existing metal drainage or deteriorated pipes would be replaced and upgraded to an equivalent concrete pipe.

Although initially more expensive than what is necessary for installing just the CCU utility mains, this concept of "doing it all now" is in the long run less expensive and certainly less disruptive since the area would only have to be disturbed once for both the new drainage and utilities. We understand that this involves both CCU and Public Works and money is the main issue. We believe we have a good rapport with staff in both departments and will look at various options so an informed decision can be made upfront that benefits Charlotte County.

We have worked with Charlotte County Public Works providing stormwater designs, stormwater system assessments, and water quality modeling in the past. While an involved drainage scope is likely not necessary, we will need to look at drainage swale restoration, driveway pipes, and improvements to the drainage conveyance system as it relates to utility installation impacts. We have extensive experience integrating drainage improvements into wastewater projects.

Maintenance of Traffic

Due to the presence of narrow rights of way and the anticipation that there may be instances in which we have to align mains to go around conflicts (such as mature trees), maintenance of traffic will be a key issue. The project takes place in a residential neighborhood with many dead ends/cul de sacs. Access must be maintained for pedestrian and vehicular traffic to pass, which may be challenging in some areas

We drove through this neighborhood and witnessed several people walking their dogs and riding bikes, so we understand this is an active neighborhood. Maintenance of traffic so that construction can progress while allowing residents to uphold their normal routines while keeping all parties safe will be a key project component.

These considerations will have to be deliberated during the preliminary engineering and throughout the design process. This may impact the sewer technology recommendation, the construction sequencing, proposed methods of construction, and many other facets which will have to be worked out during design.

Large Areas of Disruption during Construction

We have learned through the last 20 years of designing and providing CEI services specifically for septic to sewer projects that despite a contractor's best intentions, there is no question that large areas can be disturbed for several months aggravating the residents, if not properly controlled.

For this reason, we typically provide a construction phasing plan where the contractor is limited to a certain area and cannot move into another area until the prior area is cleaned up. In addition to the "Phasing Plan," we also develop specific language that we put in our specifications which is exactly what we did for the East/West Spring Lake and Ackerman Wastewater Expansion projects.

C. Describe probable energy savings applications.

Coordination with Other Entities

Construction projects are expensive and consume considerable energy, just to install. For this reason, we only want to "tear up" the neighborhood once, if possible. Hence, we coordinate with other utilities and Public Works to see if we can integrate their planned drainage improvements into our sewer projects.

A recent example is where a local internet provider has been upgrading its systems by directional drilling fiber optic cables in areas where our vacuum mains were already planned. We were able to coordinate and avoid a conflict. Knowledge of these improvements and correspondence documenting this helped to alleviate significant energy costs and disruption. We also coordinate with future paving programs, requesting a delay in planned overlay projects until after all our utility construction is installed, which also saves energy expenditures.

We have followed this energy cost savings process on many utility projects. For example, we included additional water main installations, we delayed both Charlotte County and Sarasota County paving projects until after our EWD sewer lines were installed, and we coordinated with other utility and road projects, all of which saves energy and therefore money for the citizens.

Operational Energy Savings

Because vacuum stations serve many customers, the pumping systems use relatively large motors and generate significant heat. GWE has developed many styles of vacuum stations using energy saving techniques for cooling, baffling for noise, controlling odor, and energy efficient pumps. For example, our newer stations use a "cupola" like the barns of yesteryear to take advantage of the natural convection airflow for cooling the station. We also use special baffles on our cooling louvers and sometimes (such as our Red Rock Park vacuum station in Sarasota), we tuck our stations among existing trees so that we get some natural shading on the station, all of which saves operational energy in the long run. Regardless of which type of pump station is required for the project, we will incorporate these types of energy saving practices into the design.

Underground utility construction projects are difficult. Problems will inevitability come up during construction. Many times, it is not so much what problems arise; but rather, *how timely the problem can be resolved*. We pride ourselves on handling field issues with a "sense of urgency", minimizing delays which equate to energy savings.

Energy Conservation

One of the recent energy conservation items we have put into practice for vacuum stations is the use of rotary claw style vacuum pumps (aka Mink pumps) which are efficient (air delivered versus electrical energy usage) in the operating range of 16-20-in. Hg.) and require less maintenance.

They do come with a higher initial cost; however, the rotary claw operation principle of Mink claw vacuum pumps reduces their energy consumption considerably in comparison with conventional vacuum pumps, so energy costs are reduced. Compared to conventional vacuum pumps, Mink claw vacuum pumps can save up to 60% on energy and operating costs. Due to their near maintenance-free operation, a decrease in operating costs adds to the savings. In addition, to reduce back-pressure on the vacuum pumps, each vacuum pump exhaust is manifolded which conserves energy.

Considering the typical vacuum station houses 4-6 vacuum pumps, the opportunity for significant energy conservation versus upfront investment costs is an advantage. We have used solar panels to help run monitoring systems in Port St Lucie and normally incorporate drought tolerant type landscaping to reduce watering needs.

New Energy Resources

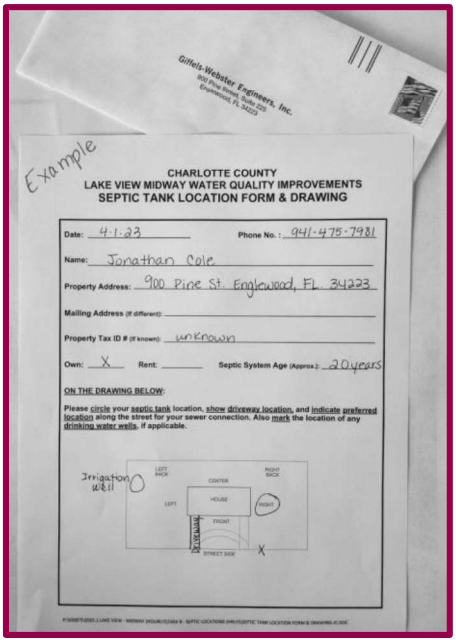
GWE provided a more efficient "new energy resource" for transporting sewage from an existing lift station by converting it to a vacuum buffer tank.

For example, the nursing home on Drury Lane in Englewood previously had an onsite treatment plant with duplex pumps in an existing lift station discharging to a perc pond. GWE was able to remove all the electrical components and convert the existing lift station into a "buffer tank" system with vacuum valves that pulled the sewage from their existing system into the Area V-2 vacuum station.

This source of energy, the vacuum, reduced the need for two power drops and the cost and maintenance of duplex lift stations. It also eliminated the need for long-term maintenance of the treatment system and the perc ponds, as all sewage was shunted to the vacuum station and treated at the regional plant, which is far more efficient. This buffer tank conversion system designed by GWE has been in operation for many years with no reported trouble. We have done this exact thing--that is, using buffer tanks for high volume flows instead of duplex stations on many of our subsequent vacuum projects.

Recently GWE designed the very first vacuum system to use only buffer tanks designed to remove multiple old lift stations for the City of Port St Lucie. One central station now replaces a dozen former pump stations eliminating multiple power sources with a single source.

D. Describe innovative approaches in production and design.


Giffels-Webster Engineers, Inc.

Example

CHARLOTTE COUNTY
LAKE VIEW MIDWAY WATER QUALITY IMPROVEMENTS
SEPTIC TANK LOCATION FORM & DRAWING

Date: 4-1-23 Phone No.: 941-475-7981

Name: Jonathan Cole

Property Address: 900 Pine St. Englewood, FL. 34223

Mailing Address (if different):

Property Tax ID # (if known): unknown

Own: X Rent: Septic System Age (Approx.): 20 years

ON THE DRAWING BELOW:

Please circle your septic tank location, show driveway location, and indicate preferred location along the street for your sewer connection. Also mark the location of any drinking water wells, if applicable.

Irrigation well

LEFT BACK CENTER RIGHT BACK LEFT HOUSE RIGHT FRONT DRIVEWAY STREET SIDE X

Septic Tank Location Forms

GWE has developed an innovative cost-saving technique for locating existing septic tanks via a septic tank location form which we mail directly to the residents within the project area that are on septic systems. The homeowner has the option to provide the location of their septic tank and input as to where the most convenient connection point would be. Since valve pits serve multiple homes, the pit cannot always be placed in a location that makes everyone happy. However, using these forms as a guideline helps in the design process.

By allowing the homeowner to suggest the actual placement of the lateral, CCU will get "buy in" avoiding homeowner arguments as to where the lateral was placed, minimizing disagreements when construction begins.

To encourage homeowner participation and simplify the return response, we provide the homeowner with a pre-addressed and stamped return envelope to create a convenient way to mail the completed form back to our office for processing.

The homeowner can offer as much or as little information as they please. We have implemented this process on several recent projects, including Lake View/Midway, and have had an overwhelmingly positive response from the public.

In large septic to sewer projects, this process is far simpler and saves a vast amount of time and resources compared to field locating each septic tank. The responses received from the septic locate mailers are marked on the plans and then the remaining septic tanks are field located by our staff to determine the best connection point.

Project Phasing

Splitting projects into smaller phases is another innovative approach. We did this for the Area V-9 Project (EWD) in Englewood. The primary vacuum station was constructed first. The Area V-9 collection area was split into three phases over the years due to EWD funding issues. We provided enough room for all pumps at build-out but phased the vacuum/sewage pump installation so that as the collection areas came online, additional pumps were installed, and the costs were allocated to the appropriate areas.

We have also split up the primary elements of the projects. A good example is in our Martin County projects where we recommended separating the construction of the vacuum stations from the collection systems. This allowed a blend of underground utility contractors to be more competitive in fields in that they were more experienced and general contractors specializing in vertical construction were not intimidated by underground utility line construction.

Value Engineering

GWE provided Construction Engineering & Inspection for several utility projects in Sarasota County, including Area "K" and Area "C" that were initially designed by other firms. During the construction of these projects, GWE was able to value engineer and field adjust, saving the County well over one million ($1M) dollars.

In addition to the direct field adjustments, GWE re-designed two of the vacuum stations (initially designed by other engineers), shaving over a quarter of a million dollars from the initial bid price.

Overall, the innovative techniques spearheaded by GWE have saved utilities several million dollars, allowing them to add service areas utilizing the savings generated by our firm. This experience allows us to produce streamlined, efficient design layouts which help produce accurate cost estimates and close bids.

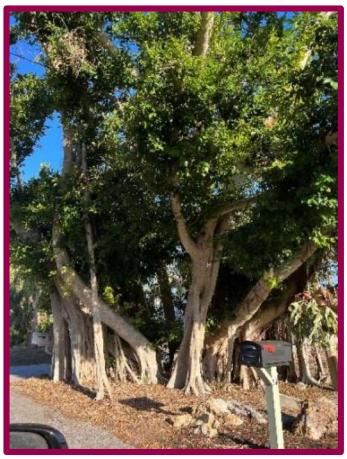
E. Address the waterway crossing and mature tree impact.

Waterway Crossing

The waterway crossing divides the "sewer shed" between W3 and W4. One of the drawbacks of vacuum versus low pressure is that bridge crossings can be difficult because the vacuum main approaching the bridge will need a series of lifts to raise the vacuum main up and over the bridge. Moreover, it must be no lower than deck level so as not to impede boat clearance. The bridge crossing elevation is approximately 4ft. While we don't know all the details yet, we believe adding a carrier pipe is feasible allowing both areas to be served with one vacuum station. We will provide a detailed conceptual layout to verify this solution as part of the PER.

Mature Trees

GWE has witnessed the sheer size and magnitude of the existing trees in the project area. Several large banyan trees are located close to the road within the right of way. We understand that these trees are likely very special to the residents who drive by them every day and we intend to protect the trees to the best of our ability. One option is to design the pipes around the trees which will likely increase road restoration costs associated with this option but ensures the protection of the trees.



Alternatively, some utility mains can be directionally drilled under the trees if realigning the main is not feasible. These options will have to be considered and compared in the preliminary engineering phase. It is easy to directional drill water mains or low pressure mains, but deep directional drills under trees are harder to access for maintenance. Also, vacuum mains, if selected as the sewer system technology, can be directionally drilled but is usually not recommended due to the strict tolerances and design constraints that must be adhered to.

F. Address access issues during construction.

When addressing access issues during construction in a developed residential neighborhood, it is essential to take extra precautions to minimize disruption and ensure the safety of the residents and the Contractor. Here is how we would address access issues during construction:

- **Inform residents in advance**: Notices/signs should be posted in visible locations, and information should be provided on how to contact the project manager or construction team for any questions or concerns.
- **Develop a traffic management plan**: A traffic management plan should be developed specifically for the residential neighborhood. The plan should consider the layout of the neighborhood, the availability of alternate routes, and any potential impacts on pedestrians and cyclists. It should also include signage, temporary barriers, and other measures to guide residents safely around the construction site.
- **Coordinate with local authorities**: It is essential to coordinate with local authorities to ensure that any road closures, diversions, or other traffic management measures comply with local regulations and requirements. This will help to minimize any potential conflicts with residents.
- **Schedule work to minimize disruption**: Construction work should be scheduled to minimize disruption to residents as much as possible. This may involve working outside of peak traffic hours, scheduling noisy work for times when it will cause the least disruption, and implementing measures to mitigate noise and other disturbances.
- **Provide safe access for residents**: Safe access to homes and properties should be provided throughout the construction period. This may involve providing safe walkways, temporary pedestrian crossings, or other measures to ensure that residents can access their homes safely.
- **Provide access for essential services**: Access to properties for mail and garbage services should be provided and coordinated throughout the construction period. This may involve providing temporary mailboxes or garbage pickup locations.
- **Address concerns promptly**: Any concerns raised by residents should be addressed promptly and effectively. This will help to maintain a positive relationship between the construction team and the local community.

By addressing access issues during construction in a residential neighborhood, project managers can help to minimize disruption, ensure the safety of residents, and maintain a positive relationship with the local community.

SECTION VI:

PRESENT EXAMPLES OF RECENTLY ACCOMPLISHED SIMILAR PROJECTS

SECTION VI: PRESENT EXAMPLES OF RECENTLY ACCOMPLISHED SIMILAR PROJECTS

A. Describe the projects to demonstrate:

1. Schedule control

Once the funding is in place for a large-scale project, it is imperative that the project moves forward, and doesn't get behind because if it does, that delay is expensive and attracts negative publicity for the County. The GWE team is very aware of this and prides itself on keeping projects progressing.

PROJECT EXAMPLES OF SCHEDULE CONTROL

Example 1: East/West Spring Lake Wastewater Expansion Project, Port Charlotte, Florida
Charlotte County's first vacuum pilot project was designed by the same GWE team. Initially, the vacuum project was bid as one large system, combined with areas adjacent to Edgewater Drive which was initially a gravity system design. The first bids came in high, especially for the gravity portion of the project. The GWE team repackaged the project into three separate projects, as well as redesigned the former gravity section, converting it to vacuum. To do that meant rerunning vacuum hydraulics and upsizing some mains. That redesign and repackaging was conducted in a compressed time frame and resulted in rebidding and awarding the project successfully meeting the overall CCU time frames and budget.

Examples 2 through 10: All the large Englewood Water District Vacuum projects, Englewood, Florida - V-1, V-2, V-3, V-4, V-5, V-6, V-7, V-8 and V-9.
Examples of schedule control include every single vacuum sewer project we have designed and managed for the Englewood Water District. We encourage you to contact the EWD for confirmation.

Mr. Keith Ledford, P.E.,
Operations/Technical Sup. Mgr.
Englewood Water District
201 Selma Avenue
Englewood, FL 34223
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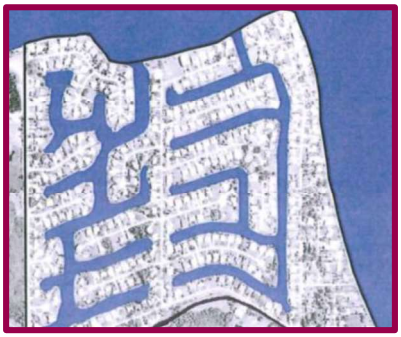
kledford@englewoodwater.com

In addition to the "normal" scheduling issues, as the EWD Program progressed, Englewood was experiencing an above average growth as FDOT, Sarasota and Charlotte Counties were proposing major road improvements. GWE monitored these road projects then adjusted the scheduling and timing of the EWD vacuum construction to coordinate with the road widening schedules.

By adjusting our plans to match the schedule of the road projects as well as public input, we were able to install important utility infrastructure to prevent delays and save thousands of dollars.

Example 11: Martin County Wastewater Expansion Project, Phase I, Seagate Harbor/Lighthouse Point Sewer Expansion, Stuart, Florida
Consisting of approximately 600 residential connections, is the first of three areas designated to receive a centralized vacuum sewer system. Over 90% of all properties to be served consisted of waterfront homes with minimum vacant lots priced at more than $200,000. Due to limited and high-cost real estate in surrounding neighborhoods, a minimal footprint size was designed for the vacuum station.



The vacuum station was constructed on a nonconforming residential lot owned by Martin County. Construction of the Seagate Harbor/Lighthouse Point Sewer Expansion Project took place over a compressed time frame and was completed on time and within the allotted budget.

Example 12: City of Punta Gorda – Tee & Green Water Main Improvements, Punta Gorda, Florida

Steve Adams, P.E.,
Utility Engineering Manager
City of Punta Gorda
3132 Cooper Street
Punta Gorda, FL 33950
(941) 575-3325
sadams@ci.punta-gorda.fl.us

On March 5, 2021, GWE was issued a purchase order by the City of Punta Gorda to design and permit 3,000 feet of water main improvements for the Tee and Green estates subdivision.

The agreement stipulated a project delivery date of August 31, 2021. GWE exceeded the deadline by nearly a month having received FDEP permits on August 6, 2021.

Our approach to this project was structured in a way that is simple to understand. We offered a "tried-and-true" multi-tasked approach that has been developed through years of similar project experience and refining processes for schedule development. The most crucial part of any schedule is the proper development of the work breakdown structures, logic, and durations. Once the schedule was complete, we analyzed the critical path avoiding constraints. For this project and like many others, obtaining the survey through our subconsultant was the longest duration. In fact, it took longer than anticipated. Once the survey was received with some tuning of resources and durations on our end, we began developing the various design stages to coincide with FDEP permitting and ultimately providing comprehensive plans and specs to be used for contractor procurement. Since we do all the design work in house, we pride ourselves on the ability to tweak or tune the schedule to stay on the critical path.

2. Cost control

Many times, we have been able to reduce costs in vacuum sewer projects saving hundreds of thousands of dollars. For example, realizing that the configuration of servicing lots for sewer service and the primary vacuum station placement was an important factor in the cost of service connections, GWE re-defined the service areas of the EWD Master Plan.

This resulted in reducing the number of vacuum/sewage pump stations from the original number of nine to six, saving over a million dollars in costs. This also enhanced the potential of a phased construction plan allowing customer connections in an orderly manner while providing revenue to the owner.

A good example of construction cost control also took place with one of our Martin County vacuum projects at Seagate Harbor/Lighthouse Point. The first bids came in way over the budget. GWE analyzed the line items and realized that some obscure (yet significant) restoration costs were contained in that pay item. Specifically, Martin County required that all lawn sprinkler systems be operational regardless of their existing condition, which was expensive for the contractors since the conditions were unknown. The restoration line items also included all the sod, paver brick driveways and landscaping restoration.

GWE realized that the cost to repave the road was less than all the restoration costs and suggested to the County that the vacuum line be moved into the street. GWE took the extra effort to redesign a large portion of the main line, shifting it into the street under the asphalt and re-bid the entire project. We did this at no additional cost to the County and the result was that the bids and the final project came in under budget.

Another example of cost savings was realized due to GWE's coordination with FDOT, Charlotte and Sarasota County for the installation of miles of force main and collection mains.

The Englewood Water District Utility Expansion Program was coordinated with the paving programs to avoid public relation nightmares of installing utilities after paving was completed, saving hundreds of thousands of dollars associated with repairing new asphalt.

One of the biggest factors contributing to higher construction costs via change orders is a "vague" or inaccurate set of construction documents. In addition, if the quantities in the bid set are incorrect and the ultimate project "overruns" the engineer's estimate of materials, the final project cost will escalate, requiring change orders that generally reflect poorly on the project.

Our method to help control construction costs is to provide clear, concise plans and accurate quantity "take-offs" for incorporation into the project's bid set. The GWE team prepares bid and contract documents while working closely with County staff to make sure those project packages produced are comprehensible to the bidding contractors.

To help control cost, we realize that what appears to work on paper may not be the most cost effective to build. For this reason, many times GWE solicits the expertise of local contractors experienced in the construction of vacuum sewers to do a quasi-peer review of the design plans versus their experience with actual field conditions.

PROJECT EXAMPLES OF COST CONTROL

Example 1: East/ West Spring Lake Wastewater Expansion Project

Charlotte County's first vacuum project was designed by the GWE team. GWE designed the collection area and vacuum station initially as one large system. The initial bids came in high, especially for the gravity portion of the project.

The GWE team successfully repackaged the entire project into three separate projects, as well as redesigned the former gravity section, converting it to a vacuum. Based on the initial bids, GWE analyzed the valve pit to lateral unit costs and redesigned much of the systems valve pits and laterals resulting in a lower overall price when rebid.

Additionally, the GWE team was able to re-calculate the vacuum hydraulics and upsize some main vacuum lines which resulted in significant savings for the benefit of Charlotte County because former gravity sections could be eliminated.

That redesign and repackaging saved significant County funds on several fronts:

1. Conversion of former gravity design to vacuum design in the "Zone 10" area saving road restoration costs and elimination of a lift station.
2. Conversion of former gravity areas to vacuum in "Contract C" saving restoration costs.
3. Elimination of the Edgewater Drive (EP2) lift station and gravity system.
4. Changing valve pit depths and lateral lengths saving significant dollars.

Examples 2 through 10: EWD Vacuum projects - V-1, V-2, V-3, V-4, V-5, V-6, V-7, V-8, and V-9.

As the EWD Wastewater Expansion Project approaches completion, we are proud to report that through the team effort of the staff of EWD, Sarasota and Charlotte Counties, and GWE acting as project manager, the following has taken place:

- The number of "vacuum stations" originally planned was reduced from 9 to 6;
- The number of service areas that were originally thought to be outside the reach of the vacuum system alternative systems was reduced from 16 to 11;
- The number of customers that were to be served by the vacuum system was increased by 10% due to growth and by serving areas that were originally thought to be outside the reach of vacuum systems and commercial rezones;

- Wherever possible, existing lift stations were taken out of service and the flow going to these stations was introduced into the vacuum systems;
- 20 of the 23 package plants listed on the original Master Plan were taken offline and the wastewater flow was introduced into the "vacuum system" or into the force main system. The remaining three will be phased out within the next three years.

Example 11: Midway Boulevard: Utilities at Box Culverts - Utility Relocation Design

GWE was retained by Charlotte County Utilities to provide engineering design services for the utility relocations required for the installation of four box culverts along Midway Boulevard.

Charlotte County Utilities
25550 Harbor View Rd., Unit 1
Port Charlotte, FL 33980
(941) 764-4364

The plans for the Fordham Waterway crossing included both water and sewer changes. Sanitary sewer gravity lines were re-routed in the area, and a new pump station was designed for existing and future use by Charlotte County Utilities. This project was successfully completed within budget.

Example 12: Veterans II and III Roadway Improvement Projects, Port Charlotte, Florida

GWE was retained by Charlotte County Utilities to provide road plans and plans for the installation of a new primary water main, necessitated because of the Veterans II and III Roadway Improvement Projects.

Capital Projects Engineer
Charlotte Co. Community Dev/Engineering Division
410 Taylor St., Unit #104
Punta Gorda, FL 33950
(941) 575-3612

GWE provided the design and permitting of the 2.1 miles of 4 lane roadway improvements, in addition to the design of a 24-inch water transmission main line for a distance of 3,300 L.F. Close coordination was critical between all project participants, while making the protection of the County's interests a priority. This project was successfully completed within budget.

Example 13: Midway Boulevard Road Widening Project – Phase I and II, Port Charlotte, Florida

Charlotte County Public Works retained GWE as the prime design consultant for the Midway Boulevard Road Widening Project, a high-priority east-west arterial transportation corridor connecting U.S. 41 and Kings Highway. GWE designed the 2 to 4 lane widening of this roadway that included large diameter gravity sewer segments. GWE provided all design and engineering for the project. Stormwater Infrastructure expertise is demonstrated in the drainage design and stormwater analysis to include County Watershed Master Plan, storm water technical review, and SWFWMD construction phase permitting, flood protection, and ICPR stormwater modeling. In combination with the U.S. 41 Culvert Project, this overall project is considered the most complex engineering project Public Works has had to date. Despite numerous obstacles, including stormwater model tailwater elevations, multiple permitting entities, and significant utilities, it was completed under budget.

3. Construction problems and means taken to solve them

Responsive and Dedicated focus for Utility Conflicts

Underground utility projects must inherently rely on other utility record drawings and interpretations. Some of those "as-builts" are marginal or even nonexistent. Since we cannot locate every single possible utility, and even the best of plans will have unknowns, problems will inevitability come up during construction no matter how good the plans are.

Many times, the key is not so much what problems arise; but rather, how timely the problem can be resolved. GWE prides itself on handling field issues rapidly and being able to shift our mains or adjust the conflict to minimize delays and cost. For example, CCU is currently working with Guymann Construction on the Ackerman Vacuum Station. Shop drawings, minor revisions, and clarifications from GWE are needed throughout the construction process to resolve questions or problems.

We pride ourselves in getting back to the contractor with answers as soon as possible to not hold up their schedule. One of the advantages of vacuum sewer (as opposed to gravity) is that it is flexible; that is, we can shift our main lines in the field and add "lifts" in many cases to go over a conflict. A recent example of this was completed in El Jobean where an old, large diameter storm drain was discovered in the area.

This pipe was in direct conflict with the vacuum main. Our designers worked with the CCU Inspectors and re-calculated the hydraulic losses to see if an additional "lift" could be installed. In addition, we evaluated how the line could be extended and possibly re-routed. Indeed, it could, and the contractor installed a "lift" going up and over and around the large storm pipe, completely avoiding the conflict.

Maintenance of Traffic

Another problem frequently encountered for projects of this nature in developed areas is maintaining vehicular and pedestrian flow safely throughout the work zone. For example, many streets in the Seagate Harbor/Lighthouse Point service area were cul-de-sacs. Although not heavily traveled, allowing the passage of essential services and emergency vehicles was critical. GWE implemented a street-by-street customer awareness program to allow contractors to adapt their schedules to minimize inconveniences. This extra effort resulted in a favorable acceptance of a major utility project.

Existing Landscaping & Decorative Driveways

A common concern for residents and a challenge for designers involves the encroachment of planters, trees, irrigation systems, specialty driveways and other amenities into the rights-of-way.

Property owners with such encroachments are extremely concerned with potential impacts a new sewer would have in these areas. When and wherever possible during the design process, we attempt to avoid or minimize impacts to these areas that are significant, solving problems in several ways including:

- Deflecting the vacuum main around the object
- Finding alternate methods or routing of the mains and service laterals
- Carefully designing to reduce the impact to brick and specialty driveways

Working with the homeowner and contractor to ensure landscape materials are carefully removed, stored, and replaced is something that our GWE designers and field personnel do to minimize and reduce problems.

Engineering Inspections for Specialized Designs

Many times, vacuum stations require inspections that are outside the realm of typical inspectors' capacities that are experienced in underground utility installations. Recently on the Ackerman vacuum station, thick layers of clay were observed while the contractor was excavating. This clay layer was planned for in the specialized structural design which relied on geotechnical borings and an envelope of stone to bridge the foundation and the clay. Our team met in the field with CCU inspectors to provide guidance on the extent of dewatering required to perform the work. In addition, we offered input on over-excavation and backfill with the stone to ensure we stabilized the stone prior to concrete placement.

4. <u>Any additional construction costs caused by design deficiencies, not program changes</u>

Any design firm that has not had design problems during construction has either been extremely lucky or has not designed many large-scale projects. Firms that have designed hundreds of projects understand that mistakes are bound to happen from time-to-time, and we certainly are not perfect. While unfortunate, in most cases it's not the mistake *per se* that's the issue; but rather, it's how the firm *addresses and resolves* the problem.

For example, a firm can put up its defenses and fight every claim, or it can work as part of the team in resolving the problem. GWE prides itself in being available to work out problems promptly during construction, regardless of if we are under contract or not; because we know that down time is expensive. Should there be an error; GWE promptly redesigns the error to minimize those down time costs.

Most of the time the issue can be worked out if it's caught prior to any significant expenditure of funds. Sometimes, it's not clear exactly who is "at fault" and, conversely, sometimes everyone is a part of the issue. For example, the information may be on the plan, but perhaps additional interpolation is necessary.

This happened in one area of intersecting street along the Midway (Phase I) Road Widening Project. A part of the sidewalk was poured incorrectly at a wrong interpolated elevation between two given elevations on the plans. GWE came to the site and helped investigate and clarify the issue.

Moreover, rather than get into a squabble with the contractor and the County over cost to resolve the problem; GWE opted to directly fund the fix, not only with design clarifications and field time to meet and go over the problem, but also paying the contractor directly for a portion of the repair, splitting the costs. By so doing, we maintained amicable relations and the balance of the project went smoothly resulting in a beautiful roadway that we are proud of as the design engineers.

Another example where GWE went the "extra mile" had to do with the resolution of an issue that involved Charlotte County and the Southwest Florida Water Management District (SWFWMD). A complaint was received from a resident who was trying to repair a septic system; but due to the construction of a new retention pond necessary for road drainage, the code separation distance for septic to the new "open water" restricted the area for expansion. The resident had to seek a variance from the state and was requesting fees for her costs.

The SWFWMD personnel called GWE administration and discussed the problem. Even though the design was perfectly acceptable and permitted through the agencies, GWE offered to directly fund the resident's fees, to put this issue to rest.

Again, these types of things are bound to happen from time to time, especially with large scale projects. We strive to be fair, reasonable, and responsive dealing with design issues to resolve the problem.

SECTION VII:

DESCRIBE YOUR EXPERIENCE AND CAPABILITIES IN THE FOLLOWING AREAS

SECTION VII: DESCRIBE YOUR EXPERIENCE AND CAPABILITIES IN THE FOLLOWING AREAS

A. Modeling Sewer Systems (Gravity, Vacuum, Low Pressure)

For the **Charlotte County** East/West Spring Lake and Ackerman Wastewater Expansion Programs, sewer modeling was provided for various sewer systems. This involved using hydraulic and/or numerical models to simulate the behavior of fluids and/or air flowing through the sewer pipes, as well as various system components such as manholes, pumps, and valves. The modeling helped to predict flow rates, pressures, and other important parameters, which were used to optimize the design and operation of the sewer systems. This also included the evaluation of various scenarios to determine the most effective approach to expand the wastewater infrastructure in the region.

PROJECT: Martin County - Port Salerno / New Monrovia — **Vacuum Sewer System** — PROJECT NUMBER: 6527

LINE: A - SE Flounder Ave (N) — MAX FLOW: .61 gpm/home — DATE: 6/3/2022

STREET OR OTHER NOTES	MAIN LINE LENGTH	PIPE SIZE	HOMES	Q MEAN	Q ACC'M	HL/ 100'	HEAD LOSS LINE	TOTAL STATIC LIFT	NUMBER LIFTS	STATIC LOSS	SUB TOTAL FRICTION	SUB TOTAL STATIC	PIPE SIZE 3"	4"	6"	8"	10"
BGL SE Flounder Ave (N)	750	6	24	7.3	14.6	0.00	0.01	2.5	2	1.50	0.01	12.87			750		
	1	6		14.6	14.6	0.01	0.00			0.00	0.01	11.37			1		
SE Flounder Ave (S)	1	6	19	20.4	26.1	0.01	0.00			0.00	0.01	11.37			1		
	1	6		26.1	26.1	0.02	0.00			0.00	0.01	11.37			1		
Cont. SE Seward St	350	6	0	26.1	26.1	0.02	0.07	1.2	1	0.70	0.08	11.37			350		
	1	8		26.1	26.1	0.01	0.00			0.00	0.08	10.67				1	
SE Bibilde Ave (N)	1	8	24	33.4	40.7	0.01	0.00			0.00	0.08	10.67				1	
	1	8		40.7	40.7	0.01	0.00			0.00	0.08	10.67				1	
SE Seaward St (S)	1	8	22	47.4	54.1	0.02	0.00			0.00	0.08	10.67				1	
	1	8		54.1	54.1	0.02	0.00			0.00	0.08	10.67				1	
Cont. SE Bibilde Ave	450	8	11	57.4	60.8	0.02	0.10	1.5	1	0.83	0.18	10.67				450	
	1	8		60.8	60.8	0.03	0.00			0.00	0.18	9.83				1	
SE Salerno Rd (S)	1	8	1	61.1	61.4	0.03	0.00			0.00	0.18	9.83				1	
	1	8		61.4	61.4	0.03	0.00			0.00	0.19	9.83				1	
Cont. SE Bibilde Ave	1,320	8	31	70.8	80.2	0.03	0.44	5.1	3	3.10	0.63	9.83				1,320	
	1	10		80.2	80.2	0.01	0.00			0.00	0.63	6.73					1
SE Lincoln St (S)	1	10	82	105.1	130.0	0.02	0.00			0.00	0.63	6.73					1
	1	10		130.0	130.0	0.04	0.00			0.00	0.63	6.73					1
SE Lincoln St (W)	1	10	18	135.5	141.0	0.04	0.00			0.00	0.63	6.73					1
	1	10		141.0	141.0	0.04	0.00			0.00	0.63	6.73					1
Cont. SE Bibilde Ave	410	10	13	144.9	146.9	0.04	0.18	6	4	2.67	0.81	6.73					410
	1	10		146.9	146.9	0.05	0.00			0.00	0.81	4.07					1
SE Grant St (S)	1	10	76	172.0	195.1	0.06	0.00			0.00	0.81	4.07					1
	1	10		195.1	195.1	0.08	0.00			0.00	0.81	4.07					1
Cont. SE Bibilde Ave	420	10	13	199.0	203.0	0.08	0.33			0.00	1.14	4.07					420
	1	10		203.0	203.0	0.08	0.00			0.00	1.14	4.07					1
Cont. SE Lee St	560	10	0	203.0	203.0	0.08	0.45	3.8	2	2.13	1.59	4.07					560
	1	10		203.0	203.0	0.08	0.00			0.00	1.59	1.93					1
To VPS	110	10	0	203.0	203.0	0.08	0.09	3.6	2	1.93	1.68	1.93					110
TOTALS -	4,391		334		203.0		1.68	23.7	15	12.87			0	0	1,103	1,778	1,510

We regularly provide detailed modeling for all of our vacuum systems to ensure they will operate within the required hydraulic parameters. Additionally, we have performed detailed hydraulic modeling of low pressure sewer for the assessment of installing a central sewer collection system in the **Bocilla/Little Gasparilla Island** areas. This modeling considered pipe sizes, velocity, hydraulic losses, and pressure, and multiple iterations were performed to assess different modeling scenarios.

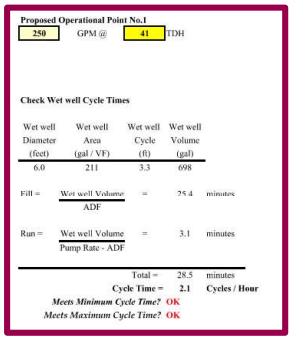
PRELIMINARY LOW-PRESSURE SEWER SYSTEM PIPE SCHEDULE AND ZONE ANALYSIS OF BOCILLA / LITTLE GASPARILLA FUTURE SEWER

SCENARIO 1: Pipe Sizing Analysis With Flow from Knight Island

SECTION	CUMU. ERCs (BUILD OUT)	ACCUM. PUMPS IN SECTION	GAL/DAY PER CORE	MAX FLOW PER CORE	ASSUMED MAX SIMULTANEOUS PUMPS OPERATING	CUMU. MAX FLOW (gpm)	NOMINAL PIPE SIZE (in)	INNER PIPE DIAMETER (in)	MAX VELOCITY (FPS)	LENGTH OF MAIN THIS ZONE (ft)	FRICTION LOSS FACTOR (FT/100 FT)	FRICTION LOSS THIS SECTION	ACCUM. FRICTION LOSS (ft)	STATIC HEAD (ft)	MISC. LOSSES (ft) * Assumes 5% of friction loss	TOTAL DYNAMIC HEAD (ft)	PRESSURE (psi)
Knight Island Section 1						250	6	6.07	2.78	400	0.42	1.7	34.8	2	1.7	38.6	16.7
Bocilla Section 1	540	540	200	12.5	21	262.5	8	7.98	1.68	2000	0.12	2.4	38.3	3	1.9	43.2	18.7
Bocilla Section 2	759	759	200	12.5	28	350	8	7.98	2.24	2035	0.21	4.2	33.1	2	1.7	36.8	15.9
Bocilla Section 3	816	816	200	12.5	30	375	8	7.98	2.40	2750	0.23	6.5	28.9	2	1.4	32.4	14.0
Bocilla Section 4	1032	1032	200	12.5	36	450	8	7.98	2.89	5120	0.33	16.9	22.5	2	1.1	25.6	11.1
Bocilla Section 5	1189	1189	200	12.5	41	512.5	10	10.02	2.09	4060	0.14	5.6	5.6	2	0.3	7.9	3.4
Little Gasparilla Section 1	40	40	200	12.5	6	75	4	4.03	1.89	2080	0.33	6.9	37.8	2	1.9	41.7	18.0
Little Gasparilla Section 2	295	295	200	12.5	14	175	6	6.07	1.94	2340	0.22	5.1	30.9	2	1.5	34.4	14.9
Little Gasparilla Section 3	660	660	200	12.5	25	312.5	8	7.98	2.00	6050	0.17	10.1	25.8	2	1.3	29.1	12.6
Little Gasparilla Section 4	700	700	200	12.5	26	325	8	7.98	2.08	5200	0.18	9.4	15.6	2	0.8	18.4	8.0
Section 11 - Wye to Future LS	1889	1889	200	12.5	62	775	12	11.94	2.22	4930	0.13	6.3	6.3	2	0.3	8.6	3.7

B. Capacity Analysis

The **Area N Phase 3** project in Sarasota County involved the addition of a gravity line extension with a large incoming flow to an existing lift station that was not originally sized for the additional flows. To ensure that the existing pumps and wet well volume were adequate for the increased flows, a capacity analysis was performed using wet well volume, peak inflow, and pump capacity evaluation. Through this analysis, it was determined that the existing pumps and volume were sufficient and that no upgrades were required, saving the County unnecessary expenses. The image to the right is an example of our capabilities using software to perform a station operational check using the new flows.



Proposed Operational Point No.1

250 GPM @ 41 TDH

Check Wet well Cycle Times

Wet well Diameter (feet)	Wet well Area (gal / VF)	Wet well Cycle (ft)	Wet well Volume (gal)
6.0	211	3.3	698

Fill = Wet well Volume / ADF = 25.4 minutes

Run = Wet well Volume / Pump Rate - ADF = 3.1 minutes

Total = 28.5 minutes

Cycle Time = 2.1 Cycles / Hour

Meets Minimum Cycle Time? OK

Meets Maximum Cycle Time? OK

C. Cost Benefit Analysis

We have experience in conducting cost-benefit analysis (CBA) for several sewer system projects, which involves evaluating the costs and benefits associated with a particular project. Our financial analysis and economic modeling systems, including tools like Excel spreadsheets that use specialized programs like Net Present Value (NPV), Benefit-Cost Ratio (BCR), and Return on Investment (ROI), can help create projections for the costs and benefits of proposed projects. We also consider project-specific ranking factors such as environmental impacts, public perception, and availability of land for pump station sites when making recommendations on the best sewer technology to serve the area. We have provided CBA to various counties, including Martin County for a standby emergency generator, and Life Cycle Analysis for vacuum systems in Hillsborough County, Martin County, and CCU's Lake View-Midway project.

Additionally, we have provided cost benefit analysis studies for smaller projects such as the **Bocilla/Little Gasprailla Island** study that we completed for Bocilla Utilities. We prepared a cost assessment to compare the relative costs of a vacuum sewer system versus a low-pressure sewer system and went a step further to assess the estimated difference in cost to add flow from an additional service area. GWE provided cost analysis and recommendations for all these scenarios to aid the client in selecting a sewer system technology.

LOW PRESSURE SEWER - SCENARIO COST COMPARISON

Section	SCENARIO 1 - Assumes Knight Island Flow				SCENARIO 2 - Does Not Assume Knight Island Flow				Cost Differential
	Nominal Pipe Size (in)	Unit Price	Length of Main (ft)	TOTAL	Nominal Pipe Size (in)	Unit Price	Length of Main (ft)	TOTAL	
Knight Island Section 1	6	$ 30	400	$ 12,000	N/A	N/A	N/A	$ -	$ 12,000
Don Pedro / Knight Island Section 2	8	$ 32	2000	$ 64,000	4	$ 28	1400	$ 39,200	$ 24,800
Don Pedro / Knight Island Section 3	8	$ 32	2035	$ 65,120	6	$ 30	2035	$ 61,050	$ 4,070
Don Pedro / Knight Island Section 4	8	$ 32	2750	$ 88,000	6	$ 30	2750	$ 82,500	$ 5,500
Don Pedro / Knight Island Section 5	8	$ 32	5120	$ 163,840	8	$ 32	5120	$ 163,840	$ -
Don Pedro / Knight Island Section 6	10	$ 50	4060	$ 203,000	8	$ 32	4060	$ 129,920	$ 73,080
Little Gasparilla Section 1	4	$ 28	2080	$ 58,240	4	$ 28	2080	$ 58,240	$ -
Little Gasparilla Section 2	6	$ 30	2340	$ 70,200	6	$ 30	2340	$ 70,200	$ -
Little Gasparilla Section 3	8	$ 32	6050	$ 193,600	8	$ 32	6050	$ 193,600	$ -
Little Gasparilla Section 4	8	$ 32	5200	$ 166,400	8	$ 32	5200	$ 166,400	$ -
Section 11 - Wye to Future LS	12	$ 60	4930	$ 295,800	10	$ 50	4930	$ 246,500	$ 49,300
									$ 168,750

D. Evaluation of Multiple Lift Stations on One Transmission Line

Our team has experience evaluating multiple pump stations on a transmission line by assessing the hydraulic behavior of the system, individual lift station performance, and system capacity to handle anticipated volumes of wastewater. We use specialized software programs such as EPANET to model the sewer system and identify bottlenecks for suggested operational or capital improvements. Our evaluations have been performed in various locations where we have applied our hydraulic modeling and analysis expertise.

Some previous projects we have evaluated multiple lift stations include **Sarasota County Area D**, phase 3 (D-3) reconfiguration of existing "low pressure" area, and **Englewood Water District V1 Vacuum Station** rehab project.

Currently, we are performing this type of analysis in our **Bay Indies** Utilities Relocation project. We are designing a new force main to serve a proposed vacuum station which will pick up flows from existing lift stations along the proposed force main route. It is critical to model the behavior of the force main under different flow circumstances to ensure there are no adverse effects on the overall system.

E. Lift Station Modification (Pumps, Controls)

Lift station modification or making changes to a lift station's pumping and control systems to improve performance, increase capacity, or address specific issues or challenges is necessary with sewer expansion programs. The modifications may involve replacing or upgrading pumps, improving control systems, or making other infrastructure changes to the lift station.

Recently, the **Englewood Water District** retained GWE to provide design services to upgrade the V-1 pump station. The V-1 vacuum station was the very first station constructed by the Englewood Water District (EWD) in 1996. In recent years, that steel tank began to experience vacuum leaks through holes eroded or rusted in the steel.

The EWD retained GWE to evaluate the options and develop the design to modify the station which involved analyzing the capacity of the existing dry pit submersible sewage pumping system and identifying opportunities to improve efficiency, reliability, or capacity with technologically newer sewage pumps. The design also included replacing soft motor starters with variable frequency drives (VFD) to operate pumps based on system demand from a flow meter that was mounted to the effluent discharge force main.

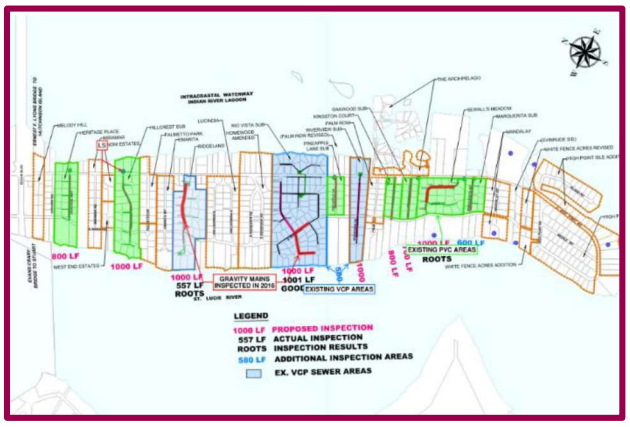
These types of projects typically present unique challenges. GWE has the experience and ability to simulate hydraulic behavior and determine the optimal pump selection or sizing, piping arrangements, and identify additional opportunities for improvement. Our team has strong mechanical and electrical engineering skills which are essential for station modification, including expertise in control systems design and electrical safety.

F. Rehabilitation of Sewer System Components

GWE's recently prepared a preliminary engineering report for the **Town of Sewall's Point** in Stuart, Florida. This project was unique because of existing dry sewer infrastructure that was installed as the area was developed over the course of decades. Our report analyzed several different options for rehabilitating the existing infrastructure and provided comparative costs to replace the infrastructure with a new collection system. The existing dryline gravity sewer systems were in some cases filled with dirt, roots, and standing water, had pipe deficiencies such as cracks, and was substandard pipe material and sizes in some areas.

GWE assessed all options to provide sewer service to the area, including methods to rehabilitate the existing sewer systems without complete replacement of the systems and with minimal disruption to the residents.

Trenchless rehabilitation technologies such as slip-lining and pipe-bursting were recommended for the gravity main rehabilitation. The rehabilitation of the pipes involves cleaning debris from pipes and inspecting each main for deficiencies to ensure the pipes are viable to be repaired. By using trenchless technologies, the damaged gravity sewer lines can be restored to a "like new" condition with minimal disturbance to the surrounding area. This approach minimized restoration costs and provided an acceptable solution for the project.



G. Evaluation and Solution of Hydrogen Sulfide issues

Selecting the appropriate odor control system requires a thorough evaluation of the sewer system's unique characteristics and the surrounding environment. This includes analyzing the levels of H2S and other chemical compounds present, the proximity of residential areas, available budget, available space on the site, and desired level of odor control. Once the assessment is complete, the most suitable odor control system can be chosen and implemented to effectively address the challenges posed by H2S in sewer systems. Bio-filter media and vapor-phase odor control systems have been proven effective in reducing odor impacts, protecting staff safety, and minimizing corrosion. Bio-filter "mulch bed" odor control systems, which utilize organic materials like wood chips to support bacteria growth and breakdown of H2S into less harmful byproducts, have been successfully implemented in many vacuum pump stations, including all of **CCU's** pump stations. Additionally, vapor-phase odor control systems, which use activated carbon or other media to remove odorous compounds from the air, are being planned to be used in the **Hillsborough County** Wimauma Area 1 pump station project and the **Bay Indies** Utilities Relocation project.

H. Sewer System Replacement Construction Options

As sewer systems age, municipalities are beginning to consider replacement options for existing infrastructure, including pipes, manholes, pump stations, and other components. Previously, the focus was on sewer expansion projects, but now the need for complete or partial sewer system replacements is becoming more prevalent. Some examples of sewer system replacement projects that we have recently worked on are summarized below.

The **Hillsborough County** Ruskin and Wimauma septic to sewer and low pressure conversion project design will replace over 500 low-pressure sewer system connections with a vacuum sewer system. The vacuum system was chosen for its ability to efficiently handle wastewater in low-lying areas with minimal excavation and disruption to the community.

The **Bay Indies** Utilities Relocation project will replace an aging gravity system that was installed behind mobile homes in a densely populated mobile home park. The gravity system is made of clay pipe and access is incredibly difficult as multiple utilities are sharing a narrow easement in the backyards of mobile homes. This project will replace this system with a vacuum sewer collection with one vacuum station instead of eight existing lift stations.

The **Spring Lake Contract D** project involved the replacement of a low-pressure sewer system with a vacuum sewer system along Harbor Boulevard. The project included a unique approach to construction that required careful planning and coordination. We developed a special provision for the construction contract that provided a sequence of work for the contractor. This approach included on-lot pump outs for the residences while the new sewer system was being installed and tested, minimizing disruptions to the community. This project is an example of how careful planning and coordination can ensure the success of a sewer system replacement project, even in a congested right of way.

SP-52 LPS FORCE MAIN AND SERVICES REMOVAL (HARBOR BOULEVARD): Properties along Harbor Boulevard. are currently served by LPS and shall be converted to vacuum service connections as part of this project. The existing LPS services shall be disconnected at the property line, removed and disposed and the existing LPS main shall be removed and disposed prior to the vacuum main installation. The Contractor shall commence LPS system removal and vacuum main and valve pits installation once the vacuum sewer station is fully operational, certified and ready to accept sewer flows. Contractor shall pump out the existing LPS tanks as needed to maintain wastewater flow until vacuum main, valve pits and services to the property line are installed, certified and ready to put in service. Pumped waste will be accepted from the project at one (1) of Utilities wastewater facilities and the disposal fee shall be waived. The Contractor shall maintain a record of the number of pump-outs at each location.

Similarly, we will be replacing existing low-pressure sewer systems in the **Lake View/Midway** project that is currently under design.

SECTIONS VIII - XI:
VOLUME OF WORK, LOCATION, LITIGATION, MINORITY BUSINESS

SECTION VIII: VOLUME OF WORK

GWE has successfully designed several large scale for Charlotte County and the total volume of work contracted within the last twenty-four months exceeds $500,000.00.

SECTION IX: LOCATION

GWE has operated a successful and financially stable engineering business in **Charlotte County, Florida** for over 30 years, providing quality design services throughout the decades to municipalities and private clients.

Our main office is, and has been located at 900 Pine Street, Suite 225, Englewood, Florida since 1992, where it remains today.

SECTION X: LITIGATION

GWE has not been named as a defendant or co-defendant in any lawsuit in the last five years.

SECTION XI: MINORITY BUSINESS

Giffels-Webster Engineers team member, Archaeological Consultants, Inc., ***does hold*** a credited MBE/WBE Certification.

State of Florida

Woman Business Certification

Archaeological Consultants, Inc.

Is certified under the provisions of
287 and 295.187, Florida Statutes, for a period from:
09/22/2021 to 09/22/2023

Jonathan R. Satter, Secretary
Florida Department of Management Services

Department of MANAGEMENT SERVICES
Office of Supplier Diversity

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

REQUIRED FORMS

PART IV - SUBMITTAL FORMS
PROPOSAL SUBMITTAL SIGNATURE FORM

1. Project Team Name and Title	Years experience	City of office individual will work out of for this project	City individual's office is normally located	City of individual's residence
Jonathan H. Cole, P.E., Principal In Charge	39	Englewood	Englewood	Englewood
Dennis Croyle, P.E., Project Mananger	12	Englewood	Englewood	Port Charlotte
Andrew Wickerson, P.E., Senior Design Engineer	37	Englewood	Englewood	Englewood
Kendra Kotlarski, E.I.	2	Englewood	Englewood	Port Charlotte
Kevin Furniss, Senior Designer	34	Englewood	Englewood	Englewood
Christopher Orren, Utility Designer	38	Englewood	Englewood	Englewood

2.	Magnitude of Company Operations	
	A) Total professional services fees received within last 24 months:	$ 3,892,535.00
	B) Number of similar projects started within last 24 months:	8
	C) Largest single project to date:	$ 9,571,565.00

3.	Magnitude of Charlotte County Projects	
	A) Number of current or scheduled County Projects	6
	B) Payments received from the County over the past 24 months (based upon executed contracts with the County).	$ 1,880,817.64

4.	Sub-Consultant(s) (if applicable)	Location	% of Work to be Provided	Services to be Provided
	Meridan Group of South FL	Port Charlotte	10	Surveying
	C & W Engineering	West Palm	<1	Electrical and I&C Design
	ACI, Inc.	Sarasota	<1	Archeological, Historical Invstigations and Cultural Req.
	Suncoast Eco Services	Port Charlotte	<1	Environmental and Protected Species Assessments
	Universal Engineering	Lee County	<1	Geotechnical

5. Disclosure of interest or involvement: List below all private sector clients with whom you have an active pending contract and who have an interest within the areas affected by this project. Also, include any properties or interests held by your firm, or officers of your firm, within the areas affected by this project.

	Firm N/A	Address
	Phone #	Contact Name
	Start Date	Ending Date
	Project Name/Description	

NAME OF FIRM Giffels-Webster Engineers, Inc

(This form must be completed and returned)

6. Minority Business:	**Yes** X **No** _____
The County will consider the firm's status as an MBE or a certified MBE, and also the status of any sub-contractors or sub-consultants proposed to be utilized by the firm, within the evaluation process.	
Comments or Additional Information:	

The undersigned attests to his/her authority to submit this proposal and to bind the firm herein named to perform as per contract if the firm is awarded the Contract by the County. The undersigned further certifies that he/she has read the Request for Proposal, Terms and Conditions, Insurance Requirements and any other documentation relating to this request and this proposal is submitted with full knowledge and understanding of the requirements and time constraints noted herein.

By signing this form, the proposer hereby declares that this proposal is made without collusion with any other person or entity submitting a proposal pursuant to this RFP.

In accordance with section 287.135, Florida Statutes, the undersigned certifies that the company is not on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, and does not have business operations in Cuba or Syria (if applicable) or the Scrutinized Companies that Boycott Israel List, or is not participating in a boycott of Israel.

As Addenda are considered binding as if contained in the original specifications, it is critical that the Consultant acknowledge receipt of same. The submittal may be considered void if receipt of an addendum is not acknowledged.

Addendum No._____ Dated_____ Addendum No._____ Dated_____ Addendum No._____ Dated_____

Addendum No._____ Dated_____ Addendum No._____ Dated_____ Addendum No._____ Dated_____

Type of Organization (please check one):

INDIVIDUAL (_)
PARTNERSHIP (_)
CORPORATION (X)
JOINT VENTURE (_)

Giffels-Webster Engineers, Inc — Firm Name
941-475-7981 — Telephone
none — Fax

n/a — Fictitious or d/b/a Name
38-2749086 — Federal Employer Identification Number (FEIN)

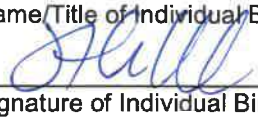
900 Pine Street, Suite 225 — Home Office Address

Englewood, FL 34223 — City, State, Zip
38 — Number of Years in Business

n/a — Address: Office Servicing Charlotte County, other than above

Jonathan H. Cole, P.E., President — Name/Title of your Charlotte County Rep.
941-475-7981 — Telephone
none — Fax

Jonathan H. Cole, P.E., President — Name/Title of Individual Binding Firm (Please Print)



Signature of Individual Binding Firm
4-10-2023 — Date

jcole@gwefl.com — Email Address

(This form must be completed & returned)

DRUG FREE WORKPLACE FORM

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies that Giffels-Webster Engineers, Inc (name of business) does:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Proposer's Signature

4-10-2023
Date

END OF PART IV

(This form must be completed & returned)