TASK ORDER No. 2018-01

Dated this day of , 2018

FORT LAUDERDALE PUBLIC WORKS DEPARTMENT

FIVEASH WTP RELIABILITY UPGRADES AND DISINFECTION SYSTEM REPLACEMENT DESIGN, PERMITTING AND BIDDING SERVICES

PROFESSIONAL SERVICES

This Task Order is being issued under a specific agreement between the City of Fort Lauderdale (CITY) and Hazen and Sawyer, P.C. (CONSULTANT) in accordance with the terms of the agreement "General Water Consultant Professional Architectural - Engineering Services" for professional services dated May 17, 2011 and expiring on May 16, 2018 between CITY and CONSULTANT ("Master Agreement #606-10466") and amended as approved by City Commission on June 5, 2012.

PROJECT BACKGROUND

Hazen completed the design for the Fiveash WTP Reliability Upgrades and Disinfection System Replacement project in late 2011. The design documents were prepared under the following task orders:

- Task Order 04-01: Fiveash Water Treatment Plant Upgrades – Phase II
- Task Order 06-03: Fiveash Water treatment Plant Phase III Design Services
- Task Order 2011-01: Disinfection System Replacement

Task Order 2018-01 supersedes and replaces these prior task orders.

Permitting of the project was completed in late 2012. The permits acquired in 2012 have expired. The building code in effect during the design phase (i.e., Florida Building Code (FBC) 2007) has been updated several times since completion of the design.

The CITY's Building Official, Engineering Division staff, and Hazen met in 2017 to review re-permitting of the project. The Building Official indicated the following:

- The CITY submitted the drawings for repermitting in August 2016.
- The 2014 FBC was in effect at the time of the CITY's submission.
- The Building Official determined that re-permitting of the project would proceed under the 2014 FBC regardless of the adoption date for the 2017 FBC.

To proceed with bidding of this project, the design documents must be updated to comply with the 2014 FBC. Under this task order, CONSULTANT shall revise the Fiveash WTP Reliability Upgrades and Disinfection System Replacement project drawings and specifications to comply with the 2014 FBC and obtain new construction permits from local, county and state agencies with jurisdiction.

GENERAL REQUIREMENTS

Design Standards

The CONSULTANT shall be solely responsible for determining the standards the work shall meet and obtain all the requisite regulatory approvals. The design shall include, but is not limited to, the plans and specifications, which describe all systems, elements, details, components, materials, equipment, and any other information necessary for construction. The design shall be accurate, coordinated between disciplines, and in all respects, adequate for construction, and shall be in conformity, and compliance, with all applicable laws, codes, permits, and regulations.

Quality Control

The CONSULTANT is responsible for the quality control (QC) of their work and of its sub-consultants. The CONSULTANT shall provide to the City the list of sub-consultants which shall be used for this project. This list shall not be changed without prior approval of the CITY. All sub-consultant documents and submittals shall be submitted directly to the CONSULTANT for their independent QC review. The City shall only accept submittals for review and action from the CONSULTANT.

The CONSULTANT shall be responsible for the professional quality, technical accuracy, and coordination of all pre-design services, designs, drawings, specifications, and other services furnished by the CONSULTANT and their sub-consultant(s). It is the CONSULTANT's responsibility to independently and continually QC their plans, specifications, reports, electronic files, progress payment applications, schedules, and all project deliverables required by this task order. The CONSULTANT shall provide the CITY with a marked up set of plans and/or specifications showing the CONSULTANT’s QC review. Such mark-ups shall accompany the CONSULTANT’s scheduled deliverables. The submittal shall include the names of the CONSULTANT’s staff that performed the QC review for each component (structures, roadway, drainage, etc.).

Project Schedule

The CONSULTANT shall submit a preliminary project schedule as an exhibit of this task order. The schedule shall be prepared in Microsoft Project, and shall utilize an estimated Notice-to-Proceed (NTP), based on best available information.

The CONSULTANT shall submit a final project schedule to the CITY, for approval, within 10 business days after receiving the NTP and prior to beginning work. No work shall commence without an approved schedule. The final schedule shall include design, permitting activities, submittal review timeframes, and other project activities as required to complete the work. The CONSULTANT shall submit updated project schedules as required in the specific scope of services.

Permitting

The CONSULTANT shall coordinate with the CITY, regulatory agencies, and any other government entity having an interest or jurisdiction, which may require permits for this project. The CONSULTANT shall provide an estimate of fees and duration associated with the

permitting process. Some of the regulatory or permitting agencies associated with this project include, but are not limited to:

- South Florida Water Management District (SFWMD)
- U.S. Army Corps of Engineers (USACE)
- U.S. Coast Guard (USCG)
- Broward County Environmental Protection and Growth Management Department (BCEPGMD)
- Broward County Environmental Licensing and Building Permitting
- CITY' s Department of Sustainable Development (DSD)

SPECIFIC SCOPE OF SERVICES

The Scope of Services to be provided by CONSULTANT shall be as follows:

Task 1 – Reliability and Disinfection System Redesign

CONSULTANT shall update the Fiveash WTP Reliability Upgrades and Disinfection System Replacement drawings and specifications as follows:

- General
    1. Per March 23, 2017 meeting with the DSD, prepare a new drawing that presents a narrative description of the scope of improvements for the following:

Building	Master Permit No.
Building No. 1 - Proposed Hypochlorite Building	16082896
Building No. 2 - Proposed Generator Building	16082913
Building No. 3 - Renovation of Existing Operations Building	16082884
Carbon Dioxide System	To Be Determined

    2. Per March 23, 2017 meeting with the DSD, the DSD staff agreed that the DSD will review the building permit application submittal concurrent with the Health Department and Broward County permit applications.

- Electrical - The electrical design for Fiveash WTP project was completed in 2011. The design was based on National Electric Code (NEC) 2008 and 2007 FBC (the codes in effect during the design and permitting phases). The current NEC code version is 2011 and FBC code version is 2014 Fifth Edition. The 2011 NEC and 2014 FBC include signification revisions for electrical systems. The following is a list of the major design revisions needed for the Fiveash WTP electrical design to comply with the 2014 FBC:
    1. Perform a short circuit study and add short circuit values to the drawings. The short circuit study will be performed for new and existing electrical equipment that

will be modified or added under this contract. Existing equipment that is not modified, would not be included in the study model.

2. Revise design for mounting support of light fixtures suspended from ceiling as per 2014 FBC
3. Revise design that no electrical equipment or outlets shall be installed below base flood elevation + 1 ft as per Fort Lauderdale Ordinance Article II SEC. 14-10 and 14-17.4
4. Revise design to show generator noise level and compliance of 68 dBA at 23 feet as per 2014 FBC
5. Revise design for emergency source sign requirements as per National Electrical Code (NEC) 700.7
6. Revise design for proposed generator building electrical room to be in compliance with NEC 110.26.A-F
7. Revise design for all electrical rooms over 600V per NEC 110.30
8. Update all existing LED light fixtures from drawings with new up-to-date LED light fixtures. Re-run all lighting calculation software for light level at each room. Update energy table for new LED light fixtures. Where the CONSULTANT determines it is feasible, it will standardize fixture types to limit the type of fixtures.
9. Revise design of generator building to show Tier 4F generators and associated equipment (i.e., urea tank, urea recirculation pump, starter, piping, air compressor, clean emission modules, instruments, etc.)
10. HVAC engineer will select new air conditioning equipment for 2014 FBC compliance. Electrical engineer shall redo electrical calculations for the updated HVAC equipment selection; revise drawings for updated HVAC equipment selection
11. Other miscellaneous design modifications: GFI receptacles for all wet locations, voltage drop compliance, disconnect for transformer or lockable breaker, supply side bonding jumpers, etc. relating to 2011 NEC code changes
12. Revise drawings to address all comments issued by the DSD.
13. Provide written responses to the DSD's comments

- HVAC – The HVAC design for Fiveash WTP project was completed in 2011. The design was based on the 2007 FBC (the code in effect during the design and permitting phases). The current FBC code version is 2014 Fifth Edition. The 2014 FBC, with the Florida Mechanical Code (FMC) and Florida Energy Conservation Code (FEC), includes signification revisions for HVAC related systems. The following is list of the major design revisions needed for the Fiveash WTP HVAC design to comply with the 2014 FBC:

    1. Revise the HVAC design as required by the commercial requirements of the FEC which includes the glass, roof insulation, and wall insulation. The redesign will include the reselection of the HVAC units and equipment to FEC Section Chapter 4.
    2. Revise design for the HVAC duct system based on the revised cooling loads.

3. Revise design for mounting support of the HVAC units and fans to meet the new wind load anchoring requirements of the 2014 FBC.
4. Revise design of the Heating and Cooling Load requirements as required by the FMC Section 312.
5. Revise design and compliance with the Refrigerant Classification and Maximum Concentrations required by the FMC Chapter 11.
6. Revise design the Minimum Ventilation Rates required by the FMC Table 403.3, and recalculate the cooling/heating loads.
7. Recalculate the cooling load requirements when the new LED light fixtures are designed.
8. Revise design for new ventilation fans to meet the FBC 2014 efficiency requirements.
9. Revise design drawings for new HVAC units and fans to meet the FBC 2014 code.
10. Recalculate the total HVAC system performance and Energy Code Compliance form as required by the FEC Section C407 and Appendix C.
11. Miscellaneous design modifications for compliance with the current codes.
12. Revise drawings to address all comments issued by the DSD.
13. Provide written responses to the DSD's comments.

- <u>Mechanical</u>
    1. Coordinate all design revisions between the various disciplines.
    2. Revise mechanical drawings to show the additional components associated with Tier 4F generators. The additional components that would be shown on the drawings are as follows: urea tank, urea recirculation pump, starter, piping, air compressor, clean emission modules, instrument call outs.
    3. Submit manufacturer specs/instructions/installations for the double wall diesel day tank(s) to the DSD.
    4. On proposed generator building mechanical plans:
        a. Show flue piping termination.
        b. Indicate mechanical ventilation required on M-13
        c. Show air compressor tie-downs (mechanical shop area)
        d. On M-54 (Slaker Room) show the mechanical ventilation
    5. Show location of generator exhaust relative to louvers.
    6. Update the fuel tank drawings with the latest Florida Department of Environmental Protection (FDEP) approved equipment numbers (referred to as "EQ numbers").
- <u>Instrumentation</u>
    1. Update instrumentation drawings to show Tier 4F generators

2. Update input/output schedules and instrument lists for Tier 4F generators

- Structural and Architectural - The structural and architectural designs for Fiveash WTP project were completed in 2011. The design was based on the 2007 FBC (the code in effect during the design and permitting phases). The following is a list of the major design revision needed for the Fiveash WTP structural and architectural designs to comply with the 2014 FBC:

    1. Classify structures for proposed structures for seismic resistance per the new provisions of the 2014 FBC.
    2. Update specification for contractor designed or supplied building materials and products for current design provisions for wind in the 2014 FBC.
    3. Provide notes on the drawings documenting that the proposed structures comply with the minimum finished floor elevation requirements of 2014 FBC.
    4. Update the 2011 N&A geotechnical investigation report to provide the seismic design information needed under the 2014 FBC. The CITY will retain the geotechnical engineer to prepare the report.
    5. Update the drawing to show the seismic design parameters per FBC 1603.1.5.
    6. Revise the architectural drawings and specification product information to provide insulation on the walls for the proposed generator building electrical room for the energy code requirements.
    7. Revise the suspended ceiling architectural drawings in the Operations Building and Filter Building to coordinate with the updated lighting and air conditioning designs.
    8. Revise drawings to address all comments issued by the DSD.
    9. Provide written responses to the DSD's comments.
    10. The CITY will retain a geotechnical engineer to provide a signed and sealed report that indicates the "site class" per article 1613.3.2 of the 2014 FBC and chapter 20 of ASCE 7-10.
    11. The CITY will provide signed and sealed copies of the updated 2011 geotechnical investigation report.
    12. Review effect of building occupancy classification changes on facility layouts, egress requirements, number of exits, staircases etc. Update drawings as needed.
    13. Review impact of electrical code changes on suspended ceilings, life safety drawings. Update drawings as needed.
    14. Recalculate wind pressures on building based on current version of ASCE-7 noted in FBC 2014. Update drawings as needed.
    15. Update Product Approvals and material specifications of all exterior building products like roofing, windows, glazing, doors and louvers. Update drawings and specifications as needed.
    16. Review all architectural and structural material specifications to check validity of named manufacturers and model numbers. Update drawings and specifications as needed.

17. Review and classify the existing buildings based on “existing building FBC requirements”. Update drawings as needed.
18. Review building waterproofing materials and methods to ensure manufacturers and products exist. Update specifications as needed.
19. Remove all drawings, specifications and bid items associated with crack repair and painting of the exterior of the existing structures.

Task 1 Deliverables:

- Prepare revised drawings and specification to comply with the 2014 FBC.
- Revise drawings to address all comments issued by the DSD.
- Provide written responses to the DSD’s comments.
- Meet with the DSD staff as needed to address its comments.

Task 2 – Carbon Dioxide System Design

The switch from chlorine gas to bulk sodium hypochlorite as the primary disinfectant will cause a rise in the finished water pH. The extent of the rise can vary depending upon site specific finished water quality. The rise in the pH of the finished water would likely result in increased scale production in the distribution system piping and reduce disinfection effectiveness. Furthermore, an increase in pH would likely result in non-compliance with Florida Administrative Code 62-550.320, 62-550.520 and 62-550 Table 6. Carbon dioxide addition would prevent the rise in pH resulting from switching disinfectant. Consequently, the CITY decided to design a carbon dioxide storage and feed system as described in the following subsections.

Subtask 2.1 – Basis of Design Memorandum

1. Review one year of monthly operating report data for year 2016 to define current finished water pH.
2. Collect raw water from the Fiveash WTP prior to chlorination. The water shall be shipped to the bench-scale testing site.
3. Simulate the WTP process (lime addition, mixing, settling, etc.) utilizing sodium hypochlorite as the disinfectant.
4. Assess the rise in finished water pH resulting from changing from chlorine to sodium hypochlorite.
5. Perform acid addition titrations and resulting equivalent amount of carbon dioxide to achieve a finished water pH target of 8.3.
6. Recommend design criteria for sizing of a carbon dioxide system to achieve a finished water pH between 8.0 to 8.5 assuming that current lime softening practice does not change.
7. Recommend design criteria for sizing of a carbon dioxide system to achieve a finished water pH between 8.0 to 8.5 assuming that current lime softening practice is changed to add increased lime to achieve a treatment pH of 11.2 for potential color reduction benefits.
8. Assess impact on Langelier saturation index.

9. Document the results in a draft Basis of Design Memorandum.
10. The draft Basis of Design Memorandum shall include the following:
    - Equipment sizing design criteria
    - Conceptual site plan illustrating the proposed location of the carbon dioxide storage tanks
    - Conceptual site plan illustrating the proposed locations of the carbon dioxide injection points
    - Conceptual site plan illustrating the proposed locations of the Pressurized Solution Feed (PSF) panels along with the associated water pressure booster pumps
    - Conceptual site plan illustrating the proposed locations of the pH sensors
    - Draft process and instrumentation diagram
    - Description of how power will be supplied to the equipment
11. The Draft Basis of Design Memorandum will be issued to the CITY electronically. CITY will review the Draft Basis of Design Memorandum and provide written comments within two weeks of receipt of the draft document. CONSULTANT shall address CITY written comments and provide an Updated Draft Basis of Design Memorandum.
12. The draft Basis of Design Memorandum shall include an opinion of probable construction cost. The opinion of probable construction cost shall be Class 5 estimate as defined by American Association of Cost Engineers (AACE) International. A class 5 estimate expected accuracy range is plus 50 percent to minus 30 percent.
13. Based on discussion with the likely vendors for the carbon dioxide system, the Basis of Design Memorandum shall document a likely equipment delivery schedule.
14. Chair a meeting with the CITY and the Broward County Health Department (BCHD) to review the Updated Draft Basis of Design Memorandum. Input received from the BCHD will be incorporated into the updated memorandum to produce the Final Basis of Design Memorandum.

Subtask 2.1 Deliverables:

- Draft Basis of Design Memorandum: A Draft Basis of Design Memorandum shall be prepared by CONSULTANT that documents the findings of the bench-scale testing and recommends design criteria for sizing of a carbon dioxide system. The Draft Basis of Design Memorandum shall be issued digitally in PDF format via electronic mail. CITY will review the memorandum and provide written comments within two weeks of receipt of the draft document.
- Review Meeting: CONSULTANT shall participate in a meeting with the CITY to review its input on the Draft Basis of Design Memorandum. Minutes shall be prepared and issued by CONSULTANT in electronic format.
- Updated Draft Basis of Design Memorandum: CONSULTANT shall address CITY written comments and issue (via electronic mail) the Updated Draft Basis of Design Memorandum.
- BCHD Review Meeting: CONSULTANT shall participate in one meeting with the CITY and the BCHD to obtain BCHD input on the Updated Draft Basis of Design

Memorandum. Minutes shall be prepared and issued by CONSULTANT in electronic format.

- Final Basis of Design Memorandum: Input received from the BCHD will be incorporated into the updated draft memorandum to produce the Final Basis of Design Memorandum. The Final Basis of Design Memorandum shall be issued digitally in PDF format via electronic mail.

Subtask 2.2 – Detailed Design

CONSULTANT shall revise the Reliability Upgrades and Disinfection System Replacement drawings and specifications to include the design of the Carbon Dioxide System. Additional drawings shall be added as needed for the Carbon Dioxide System. To facilitate the DSD's review of the Carbon Dioxide System, revisions to the existing drawings to illustrate the Carbon Dioxide System shall be clouded and noted in the revision box of the title block.

90% Design Submission

- The design of the carbon dioxide system shall be incorporated into existing drawings for the disinfection system and reliability upgrades where feasible.
- The new additions illustrating the carbon dioxide system on the disinfection system and reliability upgrades drawings shall be clouded and annotated with a revision mark.
- New drawing sheets needed for the carbon dioxide system shall be incorporated into the disinfection system set of drawings.
- The CONSULTANT shall prepare 90% design documents. The 90% design submission shall include the following:
    - 90% design drawings (11" x 17" sheets)
    - 90% specifications
    - Updated project schedule
- The CITY shall provide comments to the CONSULTANT within 15 calendar days of receiving the submittal.
- The CONSULTANT shall attend one (1) coordination meeting with the CITY to address review comments. CONSULTANT shall prepare the agenda, record and submit meeting minutes.
- Updated project schedule shall be in Microsoft Project.

90% Design Deliverables:

- Three (3) original sets of the 90% design drawings (11" x 17" plan sheets) and specifications, together with one (1) electronic copy in Adobe PDF format.
- One (1) copy of the meeting minutes in PFD format shall be submitted via email.
- One (1) copy of updated project schedule in PFD format submitted via email.

100% Design Submission

- The CONSULTANT shall incorporate the review comments from 90% design submission into the 100% design submission.
- The CONSULTANT shall submit the 100% design submission for CITY review. The design drawings shall be submitted in 11" x 17" plan sheets. The CITY shall provide comments to the CONSULTANT within 15 calendar days of receiving the submittal.
- The CONSULTANT shall attend one (1) coordination meeting with the CITY to address review comments. CONSULTANT shall prepare the agenda, record and submit meeting minutes.
- The CONSULTANT shall provide an updated schedule in Microsoft Project as part of this submittal package for City review and approval.
- Once all comments are addressed, or if no comments or corrections are necessary, the CONSULTANT shall submit the Final Plans and Specifications for permits. CONSULTANT shall provide three (3) original signed and sealed sets of the Final Design Package (24" x 36" plan sheets), together with an electronic copy.

100% Design Deliverables:

- 100% design drawings (11" x 17" and 24" x 36" plan sheets) and specifications shall be submitted. Drawings shall be in Adobe PDF format and AutoCAD DWG format. Specifications shall be in Microsoft Word format.
- Three signed and sealed 100% design drawings and specifications shall be submitted to the permitting agencies.
- One (1) copy of the meeting minutes in PFD format shall be submitted via email.
- One (1) copy of the opinion of probable construction cost in Adobe PDF format submitted via email.
- One (1) copy of updated project schedule in PDF format submitted via email.

Task 3 – Development Review

- CONSULTANT shall prepare and submit Development Review Committee application and supporting documents as described in "Deliverables" below for the Reliability Upgrades and Disinfection System Replacement (as updated by inclusion of the Carbon Dioxide System) project.

Task 3 Deliverables:

1. Application: CONSULTANT shall prepare a Site Plan Level II application and submit it to the CITY's Development Review Committee (DRC).
2. Support Documents: The application shall include support documents required by the DRC, such as design drawings, calculations and written narratives. The support documents shall be signed and sealed by a professional engineer.
3. Meetings: CONSULTANT shall attend up to four meetings to coordinate with the DRC staff, to address comments associated with the application process.

4. Meeting Minutes: CONSULTANT shall prepare meeting minutes and issue in PDF format.

Task 4 – Permitting

- The CONSULTANT shall submit the following permit applications:

Application	Agency
Public Drinking Water Facility Construction Permit	Broward County Health Department - Environmental Engineering Division
Surface Water Management License	Broward County Water Resources Division
Environmental Resources Permit (ERP)	Broward County Water Resources Division
Environmental Review	Broward County Development and Environmental Regulation Division
Storage Tank License Amendment (Diesel Fuel Day Tanks)	Broward County Pollution Prevention, Remediation and Air Quality Division
Application to Construct a Wastewater Collection/Transmission System	Broward County Domestic Wastewater Licensing Program
Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System	Florida Department of Environmental Protection

- CONSULTANT shall participate in meetings with the permit agencies on an "as-needed" basis to respond to requests for additional information.
- CONSULTANT shall prepare written responses to requests for additional information from permitting agencies having jurisdiction.

Task 4 Deliverables:

- CONSULTANT shall apply for the permits indicated in the above scope of work.
- CONSULTANT shall participate in meetings with the permit agencies on an "as-needed" basis to respond to requests for additional information.
- CONSULTANT shall prepare written responses to requests for additional information from permitting agencies having jurisdiction.

Task 5 – Bid Assistance

- Bid Set Documents: CONSULTANT shall prepare Bid Set documents that incorporate the changes made in the drawings and specifications during the permitting phase. Drawings shall be in Adobe PDF and Autocad DWG format for 24-inch x 36-inch printing and 11-inch x 17-inch printing. The specification will be in Microsoft Word format and PDF format setup for 8.5-inch x 11-inch printing.
- Advertisement of Contract Documents: CITY will reproduce documents and handle the advertising and distribution of the contract documents.
- Pre-Bid Conference: CONSULTANT shall attend a pre-bid conference with prospective bidders and provide minutes of the meeting in a format of an addendum.

- Addenda
    - CONSULTANT shall provide timely responses to the inquiries of prospective bidders by preparing addenda to interpret and clarify the bidding documents.
    - CONSULTANT shall provide CITY with digital files of the addenda documents; CITY will issue the addenda.
    - Two addenda are assumed.
- Bid Evaluation
    - CITY will conduct bid opening and determine the responsiveness of the bidders.
    - CITY will furnish CONSULTANT with a copy of the bid tabulation.
    - CITY will furnish the completed bid forms for the bidder that CITY determines is the apparent low and responsive bidder.
    - Upon formal CITY request in writing, CONSULTANT shall review responsibility of the apparent low bidder and offer a written opinion regarding the responsibility of the apparent low bidder.
    - This scope of services includes no allowance for CONSULTANT's time to assist CITY in the event of a bid protest.
- Conformed Documents: CITY will prepare conformed contract documents for execution. CITY will provide one copy to CONSULTANT.

Task 5 Deliverables

1. Furnish one (1) set of Bid Set documents to CITY. Drawings shall be 24-inch x 36-inch. A digital copy of the drawings and specification files shall be provided on a compact disk. Digital drawings shall be in Autocad DWG and PDF formats. Digital specifications shall be in Microsoft Word and PDF formats.
2. Attend one (1) pre-bid conference.
3. Respond to questions from prospective bidders and prepare addenda for CITY distribution through BidSync for up to two addenda.
4. Upon CITY request, prepare written opinion regarding the responsibility of the apparent low bidder.

PROJECT ASSUMPTIONS

- The CONSULTANT shall not start the work until provided a written Notice to Proceed from the CITY.
- CITY will provide access to the project sites.
- Drawings prepared under this Task Order are exempt from CITY CAD Standards. The drawings shall be visually acceptable to a panel of CITY engineering / procurement experts such that the appearance of the hardcopy documents will generally match the appearance of drawings produced for similar projects in Broward and Miami-Dade Counties.
- The CITY Engineering staff have determined that the topographic survey by Craven Thompson and Associates (CTA) and dated April, 2012 will be accepted by the DSD.

- The CITY will provide Hazen with 10 signed and sealed copies of the CTA topographic survey.
- The datum of the current design drawings is National Geodetic Vertical Datum (NGVD) of 1929 per the CITY's requirements when the design drawings were developed. This scope of work does not include converting the elevations to the North American Vertical Datum (NAVD) of 1988. CITY Engineering staff have obtained DSD's acceptance that drawings don't need to change to NAVD 1988.
- CITY is responsible for obtaining the "Notice of Intent to Use Generic Permit for Stormwater Discharge from Construction Activities".
- This scope includes a $10,000 permit fee reimbursable allowance to accelerate permit acquisition. Once the permit fee reimbursable allowance budget is exhausted, the CITY will directly pay for permit applications.

ADDITIONAL SERVICES

If authorized in writing by the CITY, as an amendment to this Task Order, the CONSULTANT shall furnish, or obtain, Additional Services of the types listed in the MASTER AGREEMENT. The CITY, as indicated in the MASTER AGREEMENT, will pay for these services.

PERFORMANCE SCHEDULE

The durations of major work tasks are summarized below:

Description	Estimated Completion Time in Calendar Days	
	For Task	From NTP
Task 1 – Reliability and Disinfection System Redesign	160	160
Task 2 – Carbon Dioxide System Design		
Subtask 2.1 – Basis of Design Memorandum		
• Draft memo	30	30
• City Review	10	40
• Prepare final memo	15	55
Subtask 2.2 – Detailed Design		
• Prepare 90% Documents	45	100
• City 90% Review	15	115
• 90% Review Meeting	Milestone	Milestone
• Prepare 100% Documents	20	135
• City 100% Review	15	150
• 100% Review Meeting	Milestone	Milestone
• Address City's 100% comments	10	160
Task 3 – Development Review	120	280
Task 4 – Permitting	120	280
Task 5 – Bid Assistance	90	370

Many factors affecting the project are beyond the control of CONSULTANT including work by others such as reviews by others and delivery of information to be supplied by others. Consequently, the schedule presented herein is dynamic and is presented as a best-case scenario. The schedule will be updated when appropriate.

The CONSULTANT is aware of the urgency of the project and will give the scope of work associated with this project their highest priority. In conducting the work for this project, the CONSULTANT will make every reasonable effort to maintain the schedule deadlines shown above. In addition, the CONSULTANT will seek and pursue opportunities to expedite work tasks and decrease the overall schedule duration where possible.

METHOD OF COMPENSATION

The services performed shall be accomplished using the Not to Exceed method of compensation. Reimbursable expenses associated with these services are not included in the fees and will be itemized separately, subject to an established Not to Exceed limit. A fee schedule and cost breakdown for reimbursable expenditures is included on Exhibit A.

Pay application requests shall be prepared on the CITY's approved pay application request form. The CONSULTANT shall submit the pay application request to the CITY's Project Manager for review and approval. Once the CITY's Project Manager approves the CONSULTANT's pay application request, the CONSULTANT may submit it to the CITY's account payable department via email (AcctsPayable@fortlauderdale.gov). Pay application requests shall be submitted monthly.

TERMS OF COMPENSATION

Services will be provided for the following Not-to-Exceed amounts:

Description	Fee (Not-to-Exceed)
Task 1 – Reliability and Disinfection System Redesign	$371,928.93
Task 2 – Carbon Dioxide System Design	$179,528.82
Task 3 – Development Review	$40,405.63
Task 4 – Permitting	$61,372.63
Task 5 – Bid Assistance	$32,392.54
Reimbursables	$10,000.00
Grand Total	$695,628.55

CITY CONTACTS

Requests for payments should be directed to City of Fort Lauderdale Accounts Payable via e-mail to AcctsPayable@FortLauderdale.gov after getting approval from the CITY's Project Manager (Steve Hillberg, PE). All correspondence and submittals will be directed to the attention of Steve Hillberg, PE, Project Manager II, at the address shown below. All correspondence refers to the CITY project number and title as stated above.

Steve Hillberg, PE
Project Manager II
Public Works
City of Fort Lauderdale
City Hall, 4th Floor Engineering
100 North Andrews Avenue
Fort Lauderdale, FL 33301
(954) 828-5076
SHillberg@fortlauderdale.gov

Jorge Holguin
Senior Project Manager
Public Works
City of Fort Lauderdale
City Hall, 4th Floor Engineering
100 North Andrews Avenue
Fort Lauderdale, FL 33301
(954) 828-5675
JHolguin@fortlauderdale.gov

CONSULTANT CONTACTS

George A. Brown, PE
Senior Associate
Hazen and Sawyer
4000 Hollywood Blvd., Suite 750N
Hollywood, Florida 33021
(954) 987-0066
gbrown@hazenandsawyer.com

CITY

IN WITNESS OF THE FOREGOING**,** the parties have set their hands and seals the day and year first above written.

CITY OF FORT LAUDERDALE, a municipal corporation of the State of Florida

By: _____
Lee R. Feldman, City Manager

(CORPORATE SEAL) ATTEST:

_____
Jeffrey A. Modarelli, City Clerk

Approved as to Legal Form:

_____
Rhonda Montoya Hasan
Assistant City Attorney

CONSULTANT

WITNESSES

HAZEN AND SAWYER, P.C., a New York Corporation authorized to transact business in the State of Florida

_____

By_____
Robert B. Taylor, Jr., PE
Vice President

_____
Print Name

_____

_____
Print Name

(CORPORATE SEAL)

STATE OF FLORIDA:
COUNTY OF BROWARD:

The foregoing instrument was acknowledged before me this ___ day of _____, 2018, by _____ as _____ of Hazen and Sawyer, P.C., a New York Corporation authorized to transact business in the State of Florida and who is ☐ personally known to me or ☐ has produced _____ as identification.

(SEAL)

_____
Notary Public, State of Florida
(Signature of Notary taking Acknowledgment)

_____
Name of Notary Typed, Printed or Stamped

Personally known ____ or Produced identification _____

Type of Identification _____

Exhibit A
Work Break Down Fee Schedule
All Consultants

A. Fee Schedule

The fee schedule below is based upon an estimate of the personnel to work on the project. The actual personnel may vary based upon availability and area of expertise. Per Article 7.1.1 of the Agreement as amended, it is agreed that the method of compensation is that of "Not to Exceed Amount" which means that CONSULTANT shall perform the services set forth in the Task Order for total compensation in the amount of or less than the stated total.

All Consultants

Labor Category		Senior Associate		Associate		Principal Engineer		Engineer		Principal Designer		Designer		Hazen		SUBCONSULTANT		Total Fee
Percent Utilization		10%		14%		13%		27%		7%		29%				Granata	Hillers	
Labor Rate		$186.30/hr		$176.23/hr		$157.09/hr		$125.88/hr		$161.12/hr		$100.70/hr						
Task No	Task Title	Hrs	Subtotal ($)	Hrs	Subtotal ($)	Hrs	Subtotal ($)	Hrs	Subtotal ($)	Hrs	Subtotal ($)	Hrs	Subtotal ($)	Hrs	Fee			
1	Reliability and Disinfection System Redesign	72	$13,413.60	328	$57,803.44	47	$7,383.23	408	$51,359.04	228	$36,735.36	490	$49,343.00	1,573	$216,037.67	$57,570.00	$98,321.26	$371,928.93
2	Carbon Dioxide System Design	50	$9,315.00	100	$17,623.00	160	$25,134.40	262	$32,980.56	0	$0.00	430	$43,301.00	1,002	$128,353.96	$0.00	$51,174.86	$179,528.82
3	Development Review	43	$8,010.90	40	$7,049.20	49	$7,697.41	89	$11,203.32	0	$0.00	64	$6,444.80	285	$40,405.63	$0.00	$0.00	$40,405.63
4	Permitting	125	$23,287.50	0	$0.00	68	$10,682.12	142	$17,874.96	16	$2,577.92	0	$0.00	351	$54,422.50	$3,490.00	$3,460.13	$61,372.63
5	Bid Assistance	38	$7,079.40	0	$0.00	100	$15,709.00	0	$0.00	0	$0.00	0	$0.00	138	$22,788.40	$3,560.00	$6,044.14	$32,392.54
Totals		328	$61,106.40	468	$82,475.64	424	$66,606.16	901	$113,417.88	244	$39,313.28	984	$99,088.80	3,349	$462,008.16	$64,620.00	$159,000.39	$685,628.55

Granata = Granata & Associates, Inc.
Hillers = Hillers Electrical Engineering, Inc.

B. Reimbursables

Item	Amount
Permit Fee Allowance	$10,000.00

C. Other Costs (not used)

TOTAL NOT-TO-EXCEED FEE **$695,628.55**

Exhibit A
Work Break Down Fee Schedule
Hillers Electrical Engineering, Inc

Fiveash WTP - Reliability Upgrades and Disinfection System Replacement
HILLERS ELECTRICAL ENGINEERING, INC.
Electrical Scope Fee Breakdown
Revised on 9/27/2017

HILLERS ELECTRICAL ENGINEERING, INC.

The fee schedule below is based upon an estimate of the personnel to work on the project. The actual personnel may vary based upon availability and area of expertise. Per Article 7.1.1 of the Agreement as amended, it is agreed that the method of compensation is that of "Not to Exceed Amount" which means that CONSULTANT shall perform the services set forth in the Task Order for total compensation in the amount of or less than the stated total.

Rate	$207.44	$160.11	$91.64	$77.54	$65.46		
	President	Chief. Engin.	Prof. Engineer	CADD	Clerical	Total	TOTAL
PHASE OF WORK	Hours	Hours	Hours	Hours	Hours	Hours	TASK COST
Task 1 - Revise Drawings to meet Current Codes							
Perform short circuit study	4	32	110			146	$16,033.68
Run/add the short circuit value (per study) Dwgs	2	12	96	84		194	$17,647.00
Revise LED light Fixture + Re-run study	2	8	80	96		186	$16,470.80
Tier 4F generator detail shown on dwgs	2	2	40	56		100	$8,742.94
Redo electrical for all new HVAC units	2	2	48	60		112	$9,786.22
Sign and Seal Drawings for Bldge Department			8	24	4	36	$2,855.92
Response to Bldge Department	2	2	16	20		40	$3,752.14
Miscellaneous (brings all to current Codes)	4	8	120	128		260	$23,032.56
Task 2 - Carbon Dioxide System							
CO2 design coordination meeting (internal w/HS)			12			12	$1,099.68
BODR Electrical Design CO2 System	2	2	48	48		100	$8,855.74
BODR Review Meeting			8			8	$733.12
CO2 design coordination meeting (internal w/HS)			12			12	$1,099.68
90% Electrical Design CO2 System	2	4	128	128		262	$22,710.36
90% Review Meeting			8			8	$733.12
100% Electrical Design CO2 System	2	4	88	88		182	$15,943.16
Task 3 - Not Used							
Task 4 - Permitting							
Sign and Seal Drawings for Health Department			8	24	4	36	$2,855.92
Response to Health Department		1	4	1		6	$604.21
Task 5 - Bid Assistance							
Prepare and Issue Addenda		2	32	36		70	$6,044.14
Total Hours	24	79	866	793	8	1770	
Total Labor Cost	$4,978.56	$12,648.69	$79,360.24	$61,489.22	$523.68	$159,000.39	$159,000.39

Exhibit A
Work Break Down Fee Schedule
Granata and Associates, Inc.

Fiveash WTP - Reliability Upgrades and Disinfection System Replacement
GRANATA & ASSOCIATES, INC.
HVAC Scope Fee Breakdown
Revised on 9/5/2017

The fee schedule below is based upon an estimate of the personnel to work on the project. The actual personnel may vary based upon availability and area of expertise. Per Article 7.1.1 of the Agreement as amended, it is agreed that the method of compensation is that of "Not to Exceed Amount" which means that CONSULTANT shall perform the services set forth in the Task Order for total compensation in the amount of or less than the stated total.

Rate	$200.00	$135.00	$80.00		
	Engineer	Engineer	CADD	Total	TOTAL
PHASE OF WORK	Hours	Hours	Hours	Hours	TASK COST
Task 1 - Reliability System (HVAC) Redesign					
Perform Ventilation Calculations	8	24		32	**$4,840.00**
Perform cooling Load Calculations	12	18		30	**$4,830.00**
Perform Heating Load Calculations	6	10		16	**$2,550.00**
Reselect equipment and system components	16	24		40	**$6,440.00**
Perform system and layout design	20	40	120	180	**$19,000.00**
Revise bookspecifications	8	12		20	**$3,220.00**
Redesign control systems	12	18	24	54	**$6,750.00**
Sign and Seal Drawings for Bldge Department	3		16	19	**$1,880.00**
Response to Bldge Department	6	8		14	**$2,280.00**
Miscellaneous (brings all to current Codes)	8	12	32	52	**$5,780.00**
Task 2 - Not Used					
Task 3 - Not Used					
Task 4 - Permitting					
Sign and Seal Drawings for Health Department	3		16	19	**$1,880.00**
Response to Health Department	4	6		10	**$1,610.00**
Task 5 - Bid Assistance					
Prepare and Issue Addenda	6	8	16	30	**$3,560.00**
Total Hours	112	180	224	516	
Total Labor Cost	**$22,400.00**	**$24,300.00**	**$17,920.00**		**$64,620.00**

Exhibit B – Location Map

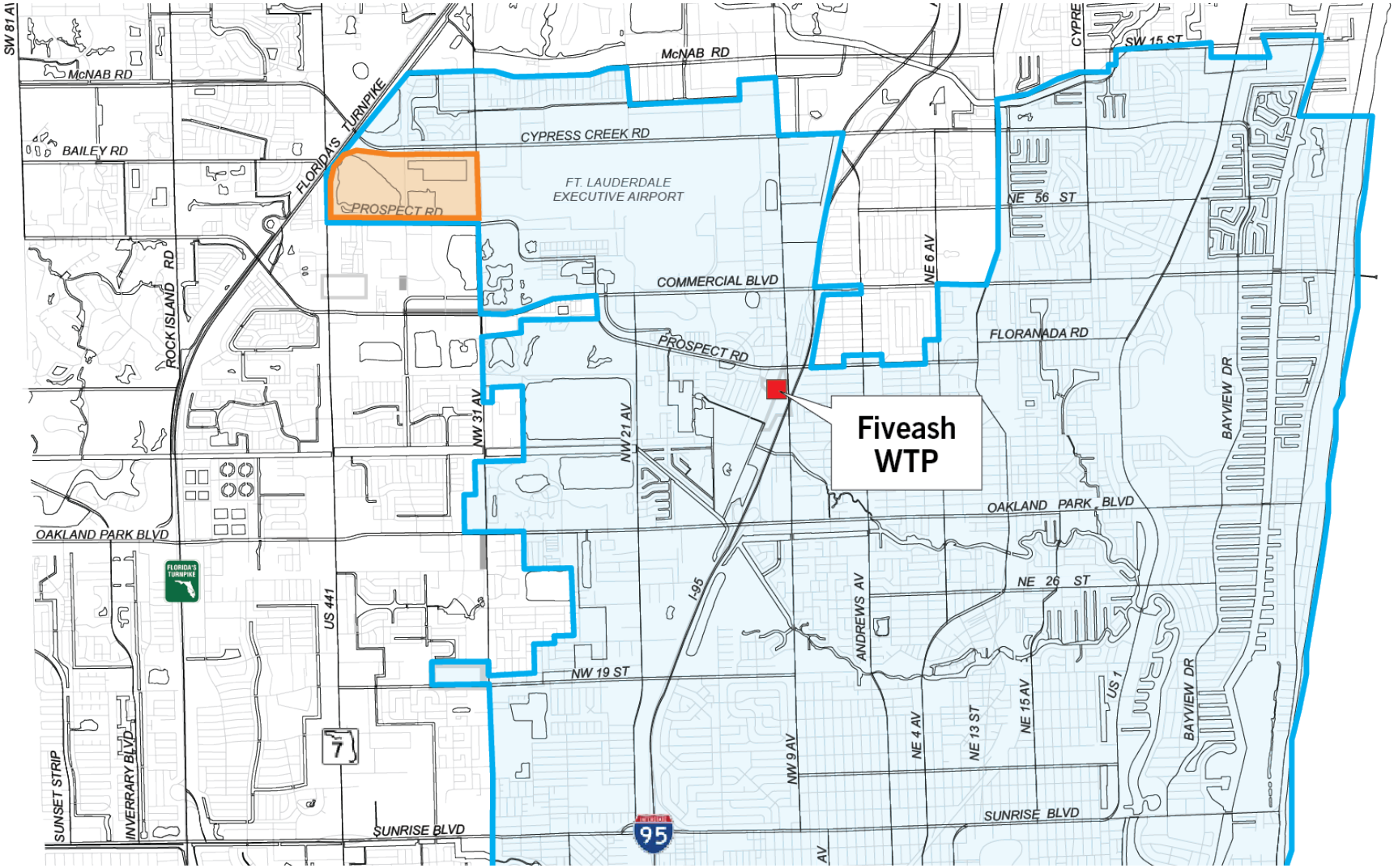

Exhibit C – Project Tentative Schedule

Description	Estimated Duration (months)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Task 1 – Reliability and Disinfection System Redesign													
Task 2 – Carbon Dioxide													
Task 3 – Development Review													
Task 4 – Permitting													
Task 5 – Bid Assistance													