

**CITY OF HALLANDALE BEACH  
2009 AGREEMENT**

**HAZEN AND SAWYER, PC  
WORK AUTHORIZATION No. 30**

**RO SKID ADDITION/  
PW NO. 9**

*In accordance with Article 12 of the AGREEMENT between City of Hallandale Beach, Florida (CITY) and Hazen and Sawyer, P.C. (CONSULTANT) for TRANSPORTATION PLANNING AND ENGINEERING, TRAFFIC STUDIES, UTILITIES, ROADWAYS, GEOTECHNICAL CONSULTING AND TESTING SERVICES, the following scope of services is provided as requested by the CITY. Compensation shall be on a maximum amount not-to-exceed basis for salary costs and reimbursables as set forth in the original agreement.*

**BACKGROUND**

The CITY has decided to continue utilizing CITY water to the longest extent possible by incorporating provisions to the existing water treatment plant that can accommodate higher salinity raw water. As a precaution to safeguard against future potential intrusion of saltwater into the CITY's wellfield, the CITY will install one reverse osmosis (RO) skid within the existing membrane treatment facility, capable of treating potentially increasingly saline raw water. The skid will be designed with the flexibility to provide redundancy to the existing skids that treat Broward County Regional Wellfield Supply (BCRWS) as well as treat the CITY's existing wells. Additional treatment, including chemical systems, to provide stability to the finished water prior to distribution will also be included in this project. Furthermore, the CITY also requests that chemical systems be updated as documented in the July 25, 2013 technical memorandum (TM) entitled "Ground Water Rule Compliance Evaluation Update" for compliance with the Ground Water Rule be included in the design.

As part of this project, CITY will extend the saltwater monitoring network as previously required by the South Florida Water Management District (SFWMD) in the CITY's ongoing Water Use Permit (WUP) application. The saltwater monitoring network will be designed to locate the saltwater interface and provide monitoring locations to track movement of the salt front, in the vicinity of the CITY's Well Nos. 7 and 8. The purpose of the saline intrusion monitoring (SALT) program is to provide an early warning monitoring system that will assist users in tracking the location and possible movement of the saltwater front.

Additionally, the CITY is considering locating an additional Biscayne Aquifer production well (PW) No. 9 within the CITY limits. The CITY has not identified the location for the well. The CITY has requested that the services for assessing the site, designing/permitting, be completed as part of this initial work authorization. The CITY has requested that the design of the pipeline and the construction oversight of the RO skid, PW No. 9 and associated pipeline be completed under future amendments to this work authorization.

The CITY has requested CONSULTANT provide these services as detailed in the following scope of work.

## **SCOPE OF WORK**

### **TASK 1 – GWR COMPLIANCE**

#### **Task 1.1 – Preliminary Communications with BCHD**

**CONSULTANT** shall attend one meeting with BCHD to confirm BCHD's requirements for approval of 4 log compliance. **CONSULTANT** shall prepare meeting minutes and distribute to **CITY** electronically.

#### **Task 1.2 – Design, Permit, and Procurement Assistance**

**CONSULTANT** shall prepare drawings and technical specifications for the anhydrous ammonia system, the chlorine residual analyzer, and the additional sodium hypochlorite dosing and injection system. **CONSULTANT** shall deliver documents to **CITY** electronically for **CITY**'s use in procuring equipment.

**CONSULTANT** shall prepare BCHD and **CITY** building department permit applications. **CONSULTANT** shall deliver signed and sealed drawings and specifications to BCHD and **CITY** building department for permit review.

#### **Task 1.3 – Certification to BCHD**

Following construction completion, **CONSULTANT** will complete certification process to BCHD for 4 log compliance. **CONSULTANT** shall attend field meeting with BCHD to verify compliance.

### **TASK 2 – RO SKID ADDITION**

#### **Task 2.1 – RO DESIGN**

**CONSULTANT** shall prepare a TM documenting the design of the RO skid, supporting chemical systems, and appurtenances. **CONSULTANT** shall submit the technical memorandum (TM) to **CITY** for **CITY** review. **CONSULTANT** shall schedule a review meeting with **CITY** to receive input within two weeks of issuing TM.

Facilities to be designed by **CONSULTANT** shall be conceptually documented in the TM. It is assumed that the facilities will consist of the following:

- RO skid of 2 MGD capacity with feed pump and appurtenances
- Cartridge filters and supporting structure
- Pretreatment filters, booster pump(s) and appurtenances outside membrane building
- Interconnecting piping in membrane building
- Yard piping for raw water, filter backwash, etc.
- Hydrated lime addition for post treatment

- Expansion of existing chemical feed systems
- Membrane treatment I&C expansion
- Electrical system expansion for new loads

**CONSULTANT** shall conduct limited testing of raw water from PW-7 and PW-8 to characterize physical, chemical and biological quality to support design of facilities. This will include pretreatment tests. It is assumed that long term membrane pilot testing will not be conducted.

**CONSULTANT** shall prepare the 90% design contract documents (i.e., drawings and technical specifications) based on input received from **CITY** at TM review meeting. **CONSULTANT** shall schedule a review meeting with **CITY** to receive input at the 90% design completion stage. Based on comments received, **CONSULTANT** shall make subsequent revisions to the documents.

Based on input received at the review meeting, **CONSULTANT** shall prepare the final (100%) contract documents (i.e., drawings and specification) and cost estimate. **CONSULTANT** shall deliver design documents to **CITY** electronically.

## **TASK 2.2 – RO PERMITTING**

**CONSULTANT** shall coordinate and attend up to four meetings with the following regulatory agencies to discuss the requirements for acquiring pre-bid construction permits for this project.

- Broward County Environmental Protection and Growth Management (BCEPGMD)
- Florida Department of Environment Protection (FDEP)
- Broward County Health Department
- City of Hallandale Beach Building Department

**CONSULTANT** shall coordinate contact with these agencies. **CONSULTANT** shall prepare permit applications required for the construction of the new facilities. **CONSULTANT** shall prepare up to two written responses to the regulatory agencies request for additional information (RAI) regarding each permit application referenced above.

It is assumed that the contractor shall be responsible for the following:

- Obtaining the water well construction permit required by the South Florida Water Management District (SFWMD).
- Be solely responsible for obtaining bacteriologic clearance in accordance with FAC 62-555.
- Preparation, and submittal of Building Department Construction Permits

It is assumed that the contractor will assist the **CITY** in collection of water samples and the **CITY** performs all laboratory analyses for bacteriological clearances. It is also assumed that the **CITY** shall perform the first laboratory analysis for bacteriological clearances free of charge. If retesting is required due to a positive bacteriological result then the contractor shall pay for all retesting.

### **TASK 2.3 – RO BID/ AWARD SERVICES**

**CONSULTANT** shall provide the following services during bidding:

- Attend pre-bid meeting with prospective bidders;
- Assist with preparation of and issue addenda as appropriate to interpret or clarify contract documents;
- Provide **CITY** with a recommendation to make a contract award, as necessary;
- Prepare six conformed sets of contract documents.

**CONSULTANT** shall supply the contractor with signed and sealed bid-set contract documents for the contractor to apply and acquire Building Department permits. The contractor shall be responsible for obtaining the building department permit.

**CONSULTANT** shall assist the contractor to obtain a construction permit from the Building Department. Assistance shall include correspondence with the contractor and Building Department, coordination and attendance at meetings with the Building Department to address comments regarding the design intent, revisions of drawings and specifications to meet the requirements of the Building Department.

### **TASK 3 – SALT PROGRAM**

**CONSULTANT** shall prepare a set of performance documents for up to three saltwater intrusion monitor wells as a separate procurement package. Salt water monitor wells are anticipated to be 4-inch diameter PVC wells completed to a depth of no more than 250 feet. Included in the design will be specifications for the purchase of equipment to monitor water quality. The equipment will be capable of measuring conductivity to depths of no more than 250 feet below land surface. Each monitoring well will be sampled twice upon completion and results will be recorded.

It is assumed **CITY** will procure the services of a well driller to complete the construction of these wells. **CITY** will oversee construction of these wells. **CONSULTANT** will develop a protocol for sampling and train City staff on sampling techniques during one sampling event.

**CONSULTANT** shall prepare a letter report summarizing the construction and sampling of the saltwater monitoring wells. Construction details for each well shall be documented. A draft copy of the report will be submitted to the **CITY** for review. A review meeting shall be held to discuss comments. **CONSULTANT** shall prepare and distribute meeting minutes. **CONSULTANT** shall incorporate comments and prepare a final report. **CONSULTANT** shall submit the report to the SFMWD as part of the **CITY**'s compliance with their WUP limiting conditions.

### **TASK 4 – RAW WATER PERMITTING**

**CONSULTANT** shall provide assistance with water use permitting for the addition of PW 9. Services

may include modelling of raw water withdrawals, communications with **CITY** and with SFWMD, and permitting documentation. **CONSULTANT** shall provide modelling updates to the existing hydrologic model following **CITY** selection of the site for PW9.

## **TASK 5 – PW 9 ADDITION**

### **TASK 5.1 – Siting Assistance**

**CONSULTANT** shall provide assistance to the **CITY** for locating PW 9 within the **CITY** limits. **CONSULTANT** shall attend up to four meetings to assist **CITY** in site review and selection.

### **TASK 5.2 – Phase I Environmental Consulting Services and Report**

**CONSULTANT** shall coordinate the completion of a Phase I General Environmental Assessment, to assist the **CITY** in determining the appropriateness of the proposed location for PW 9.

The services performed under this task may include, but are not limited to, the following:

- **CONSULTANT** shall retain and subcontract an environmental professional subconsultant, as qualified under 40 CFR 312.21, 40 CFR 312.31, and ASTM E1527-05 criteria, to complete a Phase I General Environmental Assessment at the proposed well site. The criteria and report format used for the Phase I investigation shall conform to, but not be limited to, the methodology outlined in 40 CFR 312.21, 40 CFR 312.31, and ASTM E1527-05.
- The purpose of this Phase I investigation is to investigate any contraindications of the site for use as a public drinking water supply well. The Phase I General Environmental Assessment shall investigate the site and surrounding area for potential environmental concerns related to the potential migration of contaminants from off-site or on-site sources toward or into the proposed well.
- The Phase I investigation shall include an extended search radius beyond the typical limits used for the Phase I Environmental Site Assessments due to the intended use of the subject site as a public drinking water supply well. At a minimum, regulatory file reviews shall be completed on any nearby facility with potential or documented metals or petroleum contamination in the groundwater within ¼-miles (including Leaking Underground Storage Tank Sites, Above Ground Storage Tank sites, and Underground Storage Tank Sites), any facility with potential or documented chlorinated solvent contamination in the groundwater within ½-mile from the site, and any CERCLIS, Superfund, Landfills, or other similar facility within 1-mile from the site.
- It is assumed that **CITY** will obtain written permission from the Owner for the **CONSULTANT** and environmental professional subconsultant to complete a Phase I General Environmental Assessment at the site. It is also assumed that the Owner will cooperate per typical 40 CFR 312.21, 40 CFR 312.31, and ASTM E1527-05 protocol by participating in Owner interviews, participating in site visits by

**CONSULTANT** or subconsultant, and providing unrestricted access to the property and structures. During the Owner interview, it is also assumed that the Owner will disclose any known contamination or environmental conditions on the site, and provide all historical and regulatory documentation related to previously completed environmental reports, environmental investigations, remedial activity completed, agrichemical or pesticide usage at the site, etc. to the best of the Owner's knowledge.

Following completion of the Phase I General Environmental Assessment, it is assumed that the **CONSULTANT** and **CITY** will participate in one meeting to discuss the results and recommendations of the report.

#### **TASK 5.4 – PHASE II GENERAL ENVIRONMENTAL ASSESSMENT**

**CONSULTANT** shall coordinate the completion of a Phase II General Environmental Assessment, to assist the **CITY** in determining the appropriateness of the proposed site for use as a public drinking water supply well.

The services performed under this task may include, but are not limited to, the following:

- **CONSULTANT** shall retain and subcontract a professional engineer or geologist to complete a Phase II General Environmental Assessment at the well site. The criteria and report format used for the Phase I investigation shall conform to, but not be limited to, the methodology outlined in ASTM E1903-11 and FAC Chapter 62-780.600.
- Based on the agreed upon recommendations from Phase I General Environmental Assessment, the subconsultant shall collect soil and groundwater samples and submit to a NELAC accredited laboratory for analysis for constituents of concern. The subconsultant shall be responsible for providing or subcontracting with third parties for the provision of monitor well installation, direct push borings, laboratory analysis, etc. Methods such as direct push technology borings and hand augering shall be used as appropriate by the subconsultant where they provide the most economical means to obtain samples. Costs for laboratory analyses shall be comparable or better than those allowed by the Florida Department of Environmental Protection – Petroleum Cleanup Preapproval Program or Drycleaning Solvent Cleanup Program.
- Work shall include completion of one 2" diameter monitor well drilled to an approximate total depth of 120 feet below land surface, screened from 80 to 120 feet. Well shall be tested for FDEP Primary and Secondary Drinking Water Standards and sampled per FDEP SOP protocol.
- It is assumed that **CITY** will obtain written permission from the Owner (if well is not located on City property) for the **CONSULTANT** and environmental professional subconsultant to complete the Phase II General Environmental Assessment at the site.
- It is assumed that the results of the Phase II General Environmental Assessment will

not result in recommendations for further investigation. Conditions that may be identified in the Phase II General Environmental Assessment that results in the need for additional unforeseen environmental investigation are not included in this work authorization.

Following completion of the Phase II General Environmental Assessment, it is assumed that the **CONSULTANT** and **CITY** will participate in one meeting to discuss the results and recommendations of the report.

#### **TASK 5.5 – PW 9 PRELIMINARY DESIGN**

**CONSULTANT** shall meet with **CITY** staff to confirm the location of the proposed well. It is assumed that the **CITY** will obtain all required easements. It is also assumed that no environmental features exist within the proposed project area. If environmental features such as wetlands exist, additional scope and fee will be required to address such issues. The **CITY** will obtain temporary easements for construction of the wells.

**CONSULTANT** shall identify pipeline routes to connect the proposed well to the **CITY**'s raw water pipeline. This task also includes identification of the route for Florida Power and Light (FPL) to provide primary power to the proposed wells. **CONSULTANT** shall coordinate with FPL to identify likely power routes and preliminary easement requirements.

**CONSULTANT** shall prepare a preliminary opinion of the construction cost for the recommended well configuration. The preliminary construction cost estimate shall include the well drilling, raw water pump, interconnecting raw water pipeline, electrical provisions, and remote monitoring and control system.

**CONSULTANT** shall prepare a draft preliminary design technical memorandum (TM) summarizing the PW 9 design and the salt water monitor wells design. **CONSULTANT** shall deliver the draft TM to **CITY** electronically. **CONSULTANT** shall attend one meeting with the **CITY** to collect input on the draft TM. This meeting will be scheduled within two week of submittal of the draft memorandum.

Comments received during review of the draft preliminary design TM review meeting shall be incorporated and a final version of the memorandum shall be prepared. Eight copies of the final preliminary design technical memorandum shall be submitted to the **CITY**.

#### **TASK 5.6 –PW 9 FINAL DESIGN**

**CONSULTANT** shall employ the services of a Certified Land Surveyor in the State of Florida to perform an Engineering Design Survey. The Engineering Design Survey shall include the following:

- In the survey area locate all existing aboveground pipes, valve boxes, water/electrical meter boxes, electrical pull boxes, telephone/cable risers, fences, hydrants, aboveground utilities, wood/concrete utility poles, overhead electrical lines, culverts, guardrails, pavement limits, headwalls, end-walls, manholes, vaults, mailboxes, driveways, side streets, right-of-ways limits, landscaping, traffic signage, other signage and any other improvements;

- Utility locations, including information obtained from soft dig methods;
- Provide boundary survey information that identifies utility, drainage, electric power, and canal easements and rights-of-way; and provide information on existing zoning and setbacks for each zoning code within and adjacent to the survey area;
- Within the survey area survey the locations of vegetation and individual trees (native and exotic). Trees greater than four inches in diameter shall be located and identified as to caliper and type;
- Produce a complete engineering design base map (geometric control plan) including all right-of-ways, easements and plats. The surveyor shall attempt to locate front property corners throughout the project. Data shall be compiled from recorded plats and field located property corners. Establish horizontal and vertical survey base line at 100-foot stations, nails set at 50-foot stations, cross sections at 25-foot stations and benchmark set at every 300-foot station. The Geometric Control Plan shall be related to the Florida State Plan Coordinates and shall be based on NAVD 1988.
- Prepare sketches and legal description(s) of the properties where the new wells will be located. The **CITY** will acquire the easements needed for the new well locations.
- Provide a general description, including aerial photo, showing the location of the proposed raw water pipeline and new FPL power supply. The **CITY** will provide all services (including legal description survey) to acquire the easements needed for the proposed raw water transmission pipeline and new FPL power supply.

**CONSULTANT** shall employ the services of a geotechnical specialty firm, to perform the following work:

- Perform soil borings, in accordance with the Standard Penetration Tests (ASTM D-1586) procedure. An average depth of 15 feet per boring has been assumed.
- Prepare a Geotechnical Report to provide recommendations on the foundation design for new structures. Geotechnical Report shall include recommendations on pipeline trenching, backfill and compaction.

**CONSULTANT** shall prepare the 90% design contract documents (i.e., drawings and technical specifications). **CONSULTANT** shall prepare cost estimate to provide **CITY** with an up to date progress estimate of projected probable construction cost.

**CONSULTANT** shall schedule review meetings/workshops to receive input at the 90% design completion stage. Based on comments received, **CONSULTANT** shall make subsequent revisions to the documents and deliver design documents to **CITY** electronically.

#### **TASK 5.7 – PW 9 PERMITTING**

**CONSULTANT** shall coordinate and attend up to four meetings with the following regulatory agencies to discuss the requirements for acquiring pre-bid construction permits for this project.

- Broward County Environmental Protection and Growth Management (BCEPGMD)
- Florida Department of Environment Protection (FDEP)
- Broward County Health Department
- City of Hallandale Beach Building Department

**CONSULTANT** shall coordinate contact with these agencies. **CONSULTANT** shall prepare permit applications required for the construction of the new facilities. **CONSULTANT** shall prepare up to two written responses to the regulatory agencies request for additional information (RAI) regarding each permit application referenced above.

It is assumed that the contractor shall be responsible for the following:

- Obtaining the water well construction permit required by the South Florida Water Management District (SFWMD).
- Be solely responsible for obtaining bacteriologic clearance in accordance with FAC 62-555.
- Preparation, and submittal of Building Department Construction Permits

It is assumed that the contractor will assist the **CITY** in collection of water samples and the **CITY** performs all laboratory analyses for bacteriological clearances. It is also assumed that the **CITY** shall perform the first laboratory analysis for bacteriological clearances free of charge. If retesting is required due to a positive bacteriological result then the contractor shall pay for all retesting.

#### **TASK 5.8 – PW 9 BID/ AWARD SERVICES**

**CONSULTANT** shall provide the following services during bidding:

- Attend pre-bid meeting with prospective bidders;
- Assist with preparation of and issue addenda as appropriate to interpret or clarify contract documents;
- Provide **CITY** with a recommendation to make a contract award, as necessary;
- Prepare six conformed sets of contract documents.

**CONSULTANT** shall supply the contractor with signed and sealed bid-set contract documents for the contractor to apply and acquire City Building Department permits. The contractor shall be responsible for obtaining the building department permit.

**CONSULTANT** shall assist the contractor to obtain a construction permit from the City Building Department. Assistance shall include correspondence with the contractor and City Building Department, coordination and attendance at meetings with the City Building Department to address comments regarding the design intent, revisions of drawings and specifications to meet the requirements of the City Building Department.

## **TASK 6 – RW PIPELINE DESIGN**

TO BE DETERMINED (TBD)

## **TASK 7 – CONSTRUCTION MANAGEMENT SERVICES**

TBD

### **ASSUMPTIONS**

The following assumptions were made in preparation of the above scope:

1. **CITY** will obtain all required property. Property acquisition services are not included in this work authorization.
2. **CITY** will obtain required easements and right of ways for construction of the wells and interconnecting piping.
3. **CITY** will pay for all water quality sampling and analyses required by the contract documents and/or permits. The **CITY** will be responsible for procurement of laboratory testing services.
4. It is assumed that the Florida Power and Light shall be responsible for obtaining construction permits for the construction of their facilities.
5. **CITY** will assist in coordinating site access for construction of the new production well.
6. Litigation and claims services are not included in this work authorization.
7. A cost-benefit analysis of raw water supply is not included in this work authorization.
8. The **CITY** will pay for all permitting and testing fees directly.
9. It is assumed that extensive landscaping will not be required for the well. If the services of a landscape architect are required for this design, an amendment to this work authorization will be requested.
10. The well design will include provisions for temporary portable generator connections. The design of an installed generator is not included in this work authorization.
11. The raw water pipeline location and distance has not been determined. An amendment will be issued to add the design and oversight for the pipeline once the well site has been identified.
12. A survey for the water treatment plant is assumed to not be required for permitting. If a permitting agency requires a survey, an amendment will be issued.
13. Tasks for pipeline design and construction management services (for pipeline, well, and RO skid) will be developed as future amendments to this work authorization.

### SCHEDULE OF COMPLETION

The schedule for the major work tasks is summarized below:

TASK	DESCRIPTION	DAYS FROM NTP
1	GWR	60
2	RO Skid Addition	270
3	SALT	365
4	Raw Water Permitting	365
5	PW 9	720
6	RW Pipeline	TBD
7	Construction Management	TBD
8	Additional Optional Services	TBD

NTP = Notice-to-Proceed

These services shall be rendered by **CONSULTANT** for a 720 day period, initiating from receipt of notice-to-proceed from **CITY**.

**COMPENSATION**

Compensation shall be made to **CONSULTANT** for a total initial work authorization not to exceed \$730,800. Additional tasks will be funded under future amendments to this work authorization.

<b>TASKS</b>	<b>DESCRIPTION</b>	<b>Estimated Fee (not to exceed)</b>
1 - 5	GWR, RO Skid (design/bid/permit), SALT Program, Raw Water Permitting, PW 9 (siting assistance, environmental, design through permitting)	\$730,800
6	RW Pipeline	TBD
7	Construction Management	TBD
8	Additional Optional Services	TBD

**AUTHORIZATION - HAZEN AND SAWYER, P.C.**

Accepted: Patrick A. Davis, P.E.  
Vice President

Date: