ARDURRA

July 5, 2022

J.H. Edmonds, P.E.
Director of Engineering Services
City of Corpus Christi
P.O. Box 9277
Corpus Christi, TX 78469-9277

Re: CITY OF CORPUS CHRISTI
BROADWAY WWTP THIRD CLARIFIER
CITY PROJECT NO. 21001
ARDURRA PROJECT NO. 210105
EXHIBIT 'A' – LARGE A/E CONTRACT (DESIGN, BID, & CONSTRUCTION PHASES)

Dear Mr. Edmonds:

We are pleased to submit our scope of services and accompanying fee proposal for the Large AE Contract associated with the *Broadway WWTP Third Clarifier* project (City Project No. 21001). The Scope of Services included in this Contract include Preliminary Design, Design, Bid, and Construction Phase Services plus the listed Additional Services, as authorized. These Engineering services shall be provided in accordance with the attached Large AE Exhibit 'A'.

If you have any questions or need any additional information, please do not hesitate to contact me at GAtkinson@Ardurra.com or 361-883-1984.

Thank you for selecting Ardurra to meet your engineering needs for this project.

Sincerely,
Ardurra Group, Inc.

Grady S. Atkinson, P.E.
Project Manager

Attachments

EXHIBIT "A"
CITY OF CORPUS CHRISTI, TEXAS

BROADWAY WWTP THIRD CLARIFIER
PROJECT NO. 21001

Project Description

This project will include the construction of one (1) new clarifier, odor control for the Headworks, refurbishment or demo of the existing sand filters and chemical feed system (*dependent on permitting and cost*), in addition to, paving and drainage associated with access road improvements. Only two (2) existing clarifiers out of the four (4) proposed in the original design (City Project #7293 – New Broadway Wastewater Treatment Plant) were constructed and are currently in service. An additional clarifier is currently needed to provide operational redundancy for routine inspection and maintenance of the existing two (2) clarifiers. Included in this project will be assessment of the existing clarifiers due to known deficiencies and consideration for future conditions.

The scope of work was discussed with City Staff and it was noted that there are operational problems occurring with the existing clarifiers and a desire to move away from the existing type of clarifier design proposing to investigate alternative types as part of this project. Additionally, the City will require a complete clarifier and accessories, connection to the non-potable water system, and connection to the existing clarifiers. It was noted that the demolition of the structures necessary to implement the proposed work of this project will be carried out by the City in a separate project to a specified depth in order to accommodate the proposed work of this project with no conflicts. The City expressed a preference for the south location for the new clarifier and requested Ardurra to propose the site development work as necessary to accommodate the new clarifier. The City noted that the goal as part of this project is to have three (3) clarifiers with a 30 MGD capacity total (10 MGD per clarifier); however, the City believes that the two (2) existing clarfiers were constructed to a smaller diameter than the original design called out for. Therefore, the capacity of the two (2) existing clarifiers will need to be assessed in the initial stages of design to ensure a 30 MGD flow rate capacity is met at the completion of this project. In addition to implementing the new clarifier, the City requested adding odor control at the Headworks and designing for both the refurbishment and demolition of the existing sand filters and chemical feed system to allow the City the flexibility to make a decision on which option to move forward with once permitting is further evaluated and bids are received. To accommodate for both options, operational flexibility to use or not use the sand filters will be assessed and designed for as necessary. It should be noted that at the time of this contract submittal, the City Capital Budget for construction of this project is in the amount of $4.85 M. Current Ardurra's opinion of probable construction cost for the improvements proposed as specified above is $10.8 M; therefore, project budget adjustments are necessary to complete all the scope of work as specified hereing.

The Scope of Services included in this Contract include Preliminary, Design, Bid and Construction Phase Services plus the listed Additional Services (as authorized) detailed below.

I. SCOPE OF SERVICES

A. BASIC SERVICES

1) **Preliminary Phase**. The Engineer (also referred to as Consultant) will:

1. Hold Project Kick-off Meeting. Prepare meeting agenda and distribute meeting minutes to attendees within five working days of the meeting.
2. Coordinate Scope of Work Requirements with the City's subconsultants for geotechnical engineering work.
3. Coordinate scope of work requirements with the City or City's subconsultants for the demolition requirements necessary to remove existing structures for the improvements proposed as part of this project. Note complete demo of the existing digester operations building, aerobic digester, primary clarifier no. 2, and belt press building will be included in a separate project (City Project #E12159).
4. Request and review available reports, record drawings, utility maps and other information provided by the City pertaining to the project area.
5. Develop preliminary requirements for utility relocations, replacements, or upgrades. Coordinate with the City's Project Manager and identify operating departments potential project needs.
6. Develop tie-in protocols for utility relocations, replacements, or upgrades with City Operation Staff.
7. Assess the performance of existing secondary clarifiers and propose recommend improvement plans, includes:
    - Verify existing clarifiers capacity, dimensions
    - Assess clarifiers effluent meet permit
    - Propose improvement based on design criteria
8. Design 3rd Secondary Clarifier. The following will be considered in the design:
    - 3rd Secondary Clarifier capacity.
    - Scum system design
    - Weirs, baffles, stilling wells, rakes design
    - Add drain ability to clarifier, design drainage tie-in
    - Select material with high chloride corrosion resistance
    - Provide options for different type clarifier
    - Connection to the existing non-potable water system
    - RAS/WAS pumps design
    - Yard Piping design
9. Modifications to the existing splitter box for the distribute of water to proposed 3rd Secondary Clarifier.
10. Assess the odor issues occurring at the Headworks Lift Station and propose recommended improvements for odor control.
11. Assess refurbishment of the existing sand filters and propose recommended improvements for extended operational use during none wet weather events meeting TCEQ requirements. Note that this scope of work will include providing operational ability to the City to use and not use the sand filters at any given time if TCEQ permits and will be designed for in conjunction with demo of the sand filters to bid both options out and provide the City the ability to choose which direction to move forward with at the time of contract award.
12. Assess the demolition of the sand filters and chemical feed system on the effluent line to include:
    - Design demolition plan
    - Design tie-in detail for effluent line

Note that this scope of work will be designed for in conjunction with refurbishing the sand filters to bid both options out and provide the City the ability to choose which direction to move forward with at the time of construction contract award.

13. Assess and provide pavement and drainage design criteria for providing vehicle access to RAS/WAS pumps, 3rd Secondary Clarifier, and Admin/Ops/Maintenance building.
14. Assess and recommend a preliminary construction sequencing scheme based on implementing the improvements proposed as part of this project and minimizing/eliminating interruptions to the operations of the WWTP during construction.
15. Identify and analyze requirements of governmental authorities having jurisdiction to approve design of the Project including permitting, environmental, historical, construction, and geotechnical issues.
16. Provide regular progress meetings used to coordinate ongoing issues, discuss project status and obtain input from the City. Engineer will prepare meeting minutes and will finalize and distribute after review by the City's Staff. In addition to the progress meeting minutes, a decision and action item log will be prepared for the project by the Engineer and provided to the City throughout the Preliminary Phase after all progress meeting/workshops. The Decision/Action Item Log will track all decisions made during meetings and will be formatted per City's requirements and made available via share file provided by the Engineer.

    <u>Scope Item Assumptions:</u>
    - Meetings will be held at the Corpus Christi Utilities building.
    - Utilities and Engineering Services Staff will attend progress meetings.
    - Engineer's staff working on the project will remotely dial in by phone as necessary.

    <u>Meetings:</u>
    - Five (5) two-hour progress meetings (quarterly) with utility and engineering services staff through the Preliminary Phase.

17. Coordinate the work of all subconsultants, including leading of meetings with subconsultants to coordinate completion of work and adherence to schedules. Meetings will be held bi-weekly (5 meetings total; 1-hour duration) throughout the Preliminary Phase.
18. Prepare a project schedule that summarizes all the major tasks of the project and the critical path of the project. Engineer will update the project schedule as the project progresses or changes occur throughout the preliminary phase.
19. Prepare opinion of probable construction costs based on the pertinent design scope identified in the draft and final engineering letter report.
20. Prepare a drawing and specification index that identifies the anticipated drawings and specifications that will need to be developed during the design phase.

21. Provide quality assurance reviews of the draft and final engineering letter report to ensure scope of work pertinent to City requirements is being met.
22. Prepare an Engineering Letter Report (10 – 25 page main-body text document with supporting appendices) that documents the analyses, approach, opinions of probable construction costs, and document the work with text, tables, schematic-level exhibits and computer models or other applicable supporting documents required per City Plan Preparation Standards Contract Format (CPPSCF). Engineering Letter Report to include:
    - Provide a concise presentation of pertinent factors, sketches, designs, cross-sections, and parameters which will or may impact the design, including engineering design basis, preliminary layout sketches, construction sequencing, alignment, cross section, geotechnical testing report, right-of-way requirements, conformance to master plans, identification of needed additional services, identification of needed permits and environmental consideration, existing and proposed utilities, identification of quality and quantity of materials of construction, and other factors required for a professional design.
    - Include summary output tables from Hydraulic and Hydrologic analyses.
    - Include existing site photos.
    - Provide opinion of probable construction costs.
    - Provide updated project schedule.
    - Identify and analyze requirements of governmental authorities having jurisdiction to approve design of the Project including permitting, environmental, historical, construction, and geotechnical issues.
    - Provide anticipated index of drawings and specifications.
23. Submit one (1) copy in an approved electronic format, and one (1) paper copy of the Draft Engineering Letter Report.
24. Conduct Project review meeting with City staff to review and receive City comments on the Draft Engineering Letter Report as scheduled by City Project Manager.
25. Assimilate all City review comments of the **Draft Engineering Letter Report** and provide one (1) set of the **Final Engineering Letter Report** (ELR) (electronic and hard copies using City Standards as applicable) suitable for reproduction.

City staff will provide one set only of the following information (as applicable):

- Electronic index and database of City's record drawing and record information.
- Requested record drawings, record information in electronic format as available from City Engineering files.
- The preliminary budget, specifying the funds available for construction.
- A copy of existing studies and plans. (as available from City Engineering files).

- Field location of existing city utilities. (Engineer to coordinate with City Operating Department)
- Applicable Master Plans and GIS mapping are available on the City's website.
- City Control survey Bench marks and coordinates.

The records provided for Engineer's use under this contract are proprietary, copyrighted, and authorized for use only by Engineer, and *only* for the intended purpose of this project. Any unauthorized use or distribution of the records provided under this contract is strictly prohibited.

2) **Design Phase**. Upon approval of the preliminary phase, designated by receiving authorization to proceed, the Engineer will:
   1. Provide coordination with electric and communication utility companies and private pipeline companies that may have existing facilities and must relocated to accommodate the proposed improvements.
   2. Provide assistance to identify testing, handling and disposal of any hazardous materials and/or contaminated soils that may be discovered during construction.
   3. Prepare construction documents in City standard format for the work identified in the approved ELR. Construction plans to include improvements or modifications to the storm water, water and wastewater systems (as necessary) within the project limits. Include standard City of Corpus Christi detail sheets as appropriate. **(It is anticipated the construction documents necessary for the scope of work identified herein will include a total of 156 drawings and 80 specifications; Disciplines will include Civil, Structural, Mechanical, Plumbing, Instrumentation, and Electrical).**
   4. Included in the construction documents will be a separate specification for testing, training, and facility start-up. The specification will include the following:
      - Start-Up Plan;
      - Performance Testing;
      - General Start-up and Testing Procedures;
      - Functional Testing;
      - Operational Testing;
      - Certificate of Proper Installation;
      - Services of manufacturer's representatives;
      - Training of OWNER's personnel;
      - Final testing requirements for the complete facility.
   5. Prepare construction plans in compliance with CPPSCF using English units on 11"x 17".
   6. Furnish one (1) set of the **interim plans** (60% submittal - electronic and hard copies using City Standards as applicable) to the City staff for review and approval purposes with estimates of probable construction costs. Identify distribution list for plans and bid documents to all affected franchise utilities.
      i. **Required** with the interim plans is a "Plan Executive Summary, project checklist & drawing checklist" which will identify and

summarize the project by distinguishing key elements and opinion of probable project costs.

ii. **Attend** 60% submittal meeting with City Staff to assist staff in review of 60% submittal.

7. Hold Project 60% review meeting. Prepare meeting agenda and distribute meeting minutes to attendees within five working days of the meeting. Assimilate all review comments, as appropriate and, upon Notice to Proceed.
8. Provide one (1) set of the **pre-final plans and bid documents** (90% submittal - electronic and hard copy using City Standards as applicable) to the City staff for review and approval purposes with revised estimates of probable costs. Plan execution summary, project checklist and plan checklist.
9. Hold Project 90% review meeting. Prepare meeting agenda and distribute meeting meetings to attendees within five working days of the meeting. Assimilate all review comments, and incorporate any requirements into the plans and specifications, and advise City of responding and non-responding participants as appropriate and, upon Notice to Proceed.
10. Assimilate all final review comments Upon approval by the Director of Engineering Services, provide one (1) set of the **final plans and contract documents** (electronic and full-size hard copy using City Standards as applicable) suitable for reproduction. Said bid documents henceforth become the shared intellectual property of the City of Corpus Christi and the Consultant. The City agrees that any modifications of the submitted final plans (for other uses by the City) will be evidenced on the plans and be signed and sealed by a professional engineer prior to re-use of modified plans.
11. Provide Quality Assurance/Quality Control (QA/QC) measures to ensure that all submittals of the interim (60%), pre-final (90%), and final complete plans and complete bid documents with specifications accurately reflect the percent completion designated and do not necessitate an excessive amount of revision and correction by City. Additional revisions or design submittals are required (and within the scope of Consultant's duties under this contract) if, in the opinion of the City Engineer or designee, Consultant has not adequately addressed City-provided review comments or provided submittals in accordance with City standards.
12. Provide regular progress meetings used to coordinate ongoing issues, discuss project status and obtain input from the City. Engineer will prepare meeting minutes and will finalize and distribute after review by the City's Staff. In addition to the progress meeting minutes, a decision and action item log will be prepared for the project by the Engineer and provided to the City throughout the Design Phase after all progress meeting/workshops. The Decision/Action Item Log will track all decisions made during meetings and will be formatted per City's requirements and made available via share file provided by the Engineer.

Scope Item Assumptions:

- Meetings will be held at the Corpus Christi Utilities building.

- Utilities and Engineering Services Staff will attend progress meetings.
- Engineer's staff working on the project will remotely dial in by phone as necessary.

Meetings:

Five (5) two-hour progress meetings (quarterly) with utility and engineering services staff through the Preliminary Phase.

The City staff will:

- Designate an individual to have responsibility, authority, and control for coordinating activities for the Project.
- Provide the budget for the Project specifying the funds available for the construction contract.
- Provide electronic copy of the City's standard specifications, standard detail sheets, standard and special provisions, and forms for required bid documents.

3) **Bid Phase**. The Engineer will:

1. Attend pre-bid meeting.
2. Review all pre-bid questions and submissions concerning the bid documents and prepare, in the City's format, for the Engineering Services' approval, any addenda or other revisions necessary to inform contractors of approved changes prior to bidding.
3. Attend bid opening.
4. Review bids and bidder references for completeness, balance of bid items, and responsiveness and shall prepare a tabulation of bid prices.
5. Recommend contract award, based on the lowest responsive and responsible bidder.
6. Provide support to City for preparation of Council Meeting Agenda.

The City staff will:

- The City will designate an individual to have responsibility, authority and control for coordinating activities for the construction contract award.
- The City will provide the budget for the project specifying the funds available for the construction contract.
- The City will provide the City's updated standard specifications, standard detail sheets, standard and special provisions and forms for required bid documents.
- The City will arrange and pay for printing of all documents and addenda to be distributed to prospective bidders.
- The City will advertise the projects for bidding, main the list of prospective bidders, receive and process deposits for all bid documents, issue (with assistance of Engineer) any addenda, prepare and supply bid tabulation forms, and conduct bid opening.
- The City will receive the ENGINEER's recommendation concerning bid evaluation and recommendation and prepare agenda materials for the City Council concerning bid awards.

- The City will prepare, review, and provide copies of the contract for execution between the City and the Contractor.
- This Scope of Services does not include time for the ENGINEER to assist the City in the event of bid protests

4) **Construction Administration Phase**. The Engineer will perform contract administration as described below on a **Time and Materials** basis as authorized by City Staff via written request. Services shall not exceed the fee established in Exhibit 'A' without written authorization from the Director of Engineering Services. Contract administration services performed by the Engineer shall include the following:
   1. Attend pre-construction meeting conference.
   2. Review Contractor submittals and maintain a submittal log.
   3. Review and interpret field and laboratory tests.
   4. Provide interpretations and clarifications of the contract documents for the contractor and authorize required changes, which do not affect the contractor's price and are not contrary to the general interest of the City under the contract.
      Provide Interpretations and Clarifications for Contractor thru RFI **(Anticipated 20 RFIs, 2 hrs/RFI),**
      Provide Interpretations and Clarifications for inspector **(Ancticipated 30 questions, 1 hr/question).**
   5. Attend scheduled construction progress meetings (**one (1) per month**) to discuss general progress. The anticipated construction duration is **18 months**.
   6. Make regular visits (**one (1) per month**) to the site of the Project to confer with the City project inspector and contractor to observe the general progress and quality of work, and to determine, in general, if the work is being done in accordance with the contract documents. This will not be confused with the project representative observation or continuous monitoring of the progress of construction. The anticipated construction duration is **18 months**.
   7. Assist City staff with preparation of change orders, as authorized by the City.
   8. Attend final inspection with City staff, provide punch list items to the City's Construction Engineers for contractor completion, and provide the City with a Certificate of Completion for the project upon successful completion of the project.
   9. Review Contractor-provided construction "red-line" drawings. Prepare Project record drawings and provide a reproducible set and electronic file (AutoCAD r.14 or later) within two (2) months of final acceptance of the project. All drawings shall be CADD drawn using dwg format in AutoCAD, and graphics data will be in dxf format with each layer being provided in a separate file. Attribute data will be provided in ASCII format in tabular form. All electronic data will be compatible with the City GIS system.

The City staff will:

- Designate an individual to have responsibility, authority, and control for coordinating activities during the construction phase.

- Prepare applications/estimates for payments to contractor.
- Prepare Change Orders.
- Conduct the final acceptance inspection with the Engineer.

B. ADDITIONAL SERVICES

This section defines the scope of additional services that may only be included as part of this contract if authorized by the Director of Engineering Services. Engineer may not begin work on any services under this section without specific written authorization by the Director of Engineering Services. Fees for Additional Services are an allowance for potential services to be provided and will be **negotiated** by the Director of Engineering Services as required. The Engineer shall, with written authorization by the Director of Engineering Services, perform the following:

1) **Permit Preparation**. Furnish the City all engineering data and documentation necessary for all required permits. The Engineer will prepare this documentation for all required signatures. The Engineer will prepare and submit identified permits as applicable to the appropriate local, state, and federal authorities, including:
   a) TxDOT utility and environmental permits, multiple use agreements
   b) Wetlands Delineation and Permit.
   c) Temporary Discharge Permit
   d) Texas Commission of Environmental Quality (TCEQ) Permits/Amendments
   e) Nueces County
   f) Texas Historical Commission (THC)
   g) U.S. Fish and Wildlife Service (USFWS)
   h) U.S. Army Corps of Engineers (USACE)
   i) United States Environmental Protection Agency (USEPA)
   j) Texas Department of Licensing and Regulation (TDLR)
   k) Texas General Land Office (TGLO)
   l) Other agency project-specific permits (Development Services Building Permit)

2) **Topographic Survey**. All work must be tied to and conform with the City's Global Positioning System (GPS) control network and comply with Category 6, Condition I specifications of the Texas Society of Professional Surveyors' Manual of Practice for Land Surveying in the State of Texas, Ninth Edition. Include reference to a minimum of two (2) found boundary monuments from the project area.
   a) Establish Horizontal and Vertical Control.
   b) Establish both primary and secondary horizontal/vertical control.
   c) Set project control points for Horizontal and Vertical Control outside the limits of project construction disturbance.
   d) Horizontal control will be based on NAD 83 State plane coordinates (South Zone), and the data will have no adjustment factor applied – i.e. – the coordinate data will remain in grid.
   e) Vertical control will be based on NAVD 88.

f) All control work will be established using conventional (non-GPS) methods. Perform topographic surveys to gather existing condition information.
g) Locate proposed soil/pavement core holes as drilled by the City's Geotechnical Engineering Consultant.
h) Obtain x, y, and z coordinates of all accessible existing sanitary sewer, storm sewer, water and gas lines as well as any other lines owned by third-parties and locate all visible utilities, wells and signs within the apparent ROW width along project limits. Surveying services, related to subsurface engineering (SUE) shall be provided as part of the scope of work for SUE (Additional Service 11, below).
i) Locate improvements within the apparent ROW.
j) Locate and identify trees, at least five inches in diameter within the apparent ROW.
k) Generate electronic planimetric base map for use in project design.

3) <u>Subsurface Utility Engineering</u>. Provide Level A Subsurface Utility Engineering (SUE) services for the project. Subsurface Utility Engineering services are divided into four (4) levels (Level A through Level D). Level A Services involve physically locating the utility by different geophysical methods. Once the utility is located, its coordinates are noted by survey measurements.

The purpose of performing Level A SUE services for the project is to ensure no conflicts occur between the proposed construction and existing utilities at the Broadway WWTP. The Engineer will coordinate the field surveying to help locate subsurface utilities using geophysical methods in the proposed construction area. The vertical and horizontal location, size, pipe material and configuration of the utility line will be recorded. Ardurra will transfer the data obtained from the field to update utility base maps and project design plans. Ardurra will also coordinate with the City regarding potential utility crossings and conflicts.

4) <u>Start-up Services</u>. Provide start-up services to assist in the transfer of finished work from a construction status to an operating, functional system(s). The services to be provided for this task include the following:

- Assist the City in start-up testing and equipment troubleshooting for the use of new Clarifier 3.
- Compile the operations and maintenance manuals for the City and confirm operation and maintenance requirements.
- Coordinate overall system training and review/submit training material to City for pre-review prior to training classes provided by the contractor.
- Review of As-Built drawings based on the final construction of the Clarifier 3 and component changes required for Clarifier 3 operations.
- Instrument calibration assistance as required.

<u>Scope Item Assumptions:</u>

- Contractor is responsible for preparing, testing, and cleaning equipment prior to start-up as detailed in the project specifications.

- City to maintain start-up checklists.

5) **Warranty Phase**. Provide a maintenance guaranty inspection toward the end of the one- year period after acceptance of the Project. Note defects requiring contractor action to maintain, repair, fix, restore, patch, or replace improvement under the maintenance guaranty terms of the contract. Document the condition and prepare a report for the City staff of the locations and conditions requiring action, with its recommendation for the method or action to best correct defective conditions and submit to City Staff. Complete the inspection and prepare the report no later than sixty (60) days prior to the end of the maintenance guaranty period.

II. SCHEDULE

Date	Activity
TBD	NTP
3 Months after NTP	DRAFT Engineering Letter Report
4 Months after NTP	City Review
6 Months after NTP	FINAL Engineering Letter Report
8 Months after NTP	60% Design Submittal
9 Months after NTP	City Review
11 Months after NTP	90% Pre-Final Design Submittal
12 Months after NTP	City Review
14 Months after NTP	Final Design Submittal
17 Months after NTP	Contract Award
18 Months after NTP	Begin Construction
36 months after NTP	Complete Construction

III. FEES

A. Fee for Basic Services. The City will pay the Engineer a fixed fee for providing all "Basic Services" authorized as per the table below except for the Construction Administration Phase. The fees for Basic Services will not exceed those identified and will be full and total compensation for all services outlined in Section I.A.1-3 above, and for all expenses incurred in performing these services. The Construction Administration Phase services as outlined in Section I.A. 4 above will be provided on a Time and Material (T&M) basis in accordance with the Engineer's standard hourly rates for a maximum not to exceed amount per the table below. For services provided, Engineer will submit monthly statements for services rendered. The City will make prompt monthly payments in response to Engineer's monthly statements.

B. Fee for Additional Services. For services authorized by the Director of Engineering Services under Section I.B. "Additional Services," the City will pay the Engineer a not-to-exceed fee as per the table below:

Summary of Fees

A. Basic Services Fees	
1) Preliminary Phase	$ 131,156
2) Design Phase	$ 514,168
3) Bid Phase	$ 12,964
4) Construction Administration Phase (T&M NTE)	$ 114,117
Subtotal Basic Services Fees	**$ 772,405**
B. Additional Services Fees	
1) Permit Preparation	$ 22,100
2) Topographic Survey	$ 17,310
3) Subsurface Survey	$ 17,170
4) Start-up Services	$ 11,610
5) Warranty Phase Services	$ 4,980
Subtotal Additional Services Fees	**$ 73,170**
Total Services Fees	**$ 845,575**